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PORTRAIT AND MEMOIR OF JUSTUS LIEBIG.

WHAT better proof is needed of increasing public respect for industrial pursuits, than is found in the honors that the world is beginning to pay to men of genius who are accelerating the progress of improvement in these pursuits, by their important discoveries?

Time was when the laurel was not fitted for the crown until it had been sprinkled with human blood; but thanks, as we may hope, to a more enlightened public opinion, the highest honors are now to be reserved for those whose labors most multiply the means of subsistence and comfort for increasing populations.

Under the influence of this happy change of public sentiment, we see with pleasure in recent English periodicals, of the highest character for talents and authority, the *Portraits and Biographies* of men whose minds and lives have been devoted with most efficiency to *the cause of the Plow*. To a lead so honorable we have already evinced our readiness to follow in the *Farmers' Library*. If it had not been that we learned when it was too late, that the friend who had been relied on to prepare an Agricultural Biography of Judge PETERS, had been prevented by sickness from taking it in hand, we should have endeavored to present in this number the Portrait and Memoir of some other eminent American friend of the cause; as it is, we concluded to try the art of lithography on the Portrait of JUSTUS LIEBIG, for which, foreigner as he is, we trust no apology will be needed; for, as we have before said, the *Plow* is of no party, or religion, or country; on its fruits all classes must live, of whatever creed or clime. Moreover, it may be well presumed that all persons acquainted with the progress of literature and scientific discovery in the great business of Agriculture, would like to have a nearer and more personal acquaintance with the author of a work, in respect to which the most eminent chemists in Europe and America, embracing Professor Webster, the able American Editor, concur in opinion, that the information it contains is of great amount, and that "from its publication may be dated a new era in the art of Agriculture."

While this desire to have, as it were, a personal introduction to men whose usefulness brings them into eminence, is but the offspring of a natural and salutary curiosity, their very liability to be thus exposed and scrutinized should exert a wholesome influence on the mind and habits of all young persons from the time when they are capable of reflection, and become inspired, as every one should, with ambition to be distinguished. In such habits, leading to excellence, are to be found the first dawnings of the mind and earliest development of the character of great men; such, for example, as WASHINGTON and FRANKLIN, and ADAMS, whose very copy-books, with their "pot-hooks and hangers," were preserved and are still extant.

BIOGRAPHICAL SKETCH OF DR. J. LIEBIG.

BY DR. SMITH, FORMERLY HIS PUPIL.

DARMSTADT is but little known to Englishmen, and until Mr. Murray wrote his "Handbook of Germany," and showed us the best mode of traveling along the Bergstrasse, few Englishmen troubled the little Grand Duchy; but now the formal, straight streets, in an English bath-town fashion, proclaim the intimacy of our German cousins with their wandering relations in the so-called "haughty island." In this town Justus Liebig was born, 1803. It would be unjust to say that no other remarkable thing has of late happened here; a town which shows, that however unknown to us, it is not ignorant of us, nor of many modes of advancing its citizens, which England itself seems not to have dreamed of. The father of Justus Liebig was, and is a "materialist," or a colorman, approach-

ing to what we term also a "drysalter;" and we here see the reason of the early attention paid by the boy to chemical pursuits. The interest excited by his father's experiments, seems to have founded in him such a permanent love of similar pursuits, that no one, advising him to the contrary, was able to influence his mind in any degree. Nor can his father now, when he looks with pride on the son who has so highly educated himself, refrain from thinking, as we hope many others will think with him, that the early predilections of childhood are not to be disregarded in choosing a path for future pursuit. True it is that the studies of the Gymnasium were forgotten, or almost entirely neglected, and that Virgil and Horace were not appreciated; but the teachers of the Gymnasium, like other teachers, failed to perceive that there are some studies of value which do not come under their province; and that the Latin and Greek of the olden time, beautiful as is their literature, must never dare to oppose themselves to the rapid growth of that knowledge, which is, as it were, a continuation of the creation of things, inasmuch as it opens to us truths which have for ages remained as if uncalled into existence.

At the age of fourteen, Justus knew well all that had been done in the science; had read all the books the library could give on the subject; and let no one suppose that Darmstadt not being so large as London, cannot so well supply the student with books; and Manchester, Liverpool, and Birmingham, though able to compete with it in money, cannot compete with it in literary treasures. Not that any offence is meant to Darmstadt, in comparing it for a moment with these English towns in a literary point of view; but it would be well for us to know that many as are the booksellers in England, but a small number of towns can boast of establishments such as many places which we might call villages, are supplied with in Germany. At this age, Liebig had also experimented as much as his means would allow him, and had, no doubt, a good knowledge of chemistry, whilst the impressions made on his youthful mind could not easily be effaced, growing as they did with his growth, and familiar as a game of marbles or of cricket. The usual method of learning chemistry then, as it is also unfortunately in England, was to go to an apothecary's shop, and accordingly Liebig followed this course.

It was with little encouragement that this course was undertaken; but it was the only mode left, as at school he was considered a dunce, not giving any attention to languages, and not being gifted with so much of what the phrenologists call "Imitation," as to glide easily into any form of speech or into any language used by others. I prefer saying that he is deficient in imitation, as he does show great fluency of speech, and has a peculiarly expressive style of his own, which could not be the case were it mere deficiency in language. (See Prof. Gregory's remarks in the Phren. Journ. on "Prof. Liebig's Development.")

Reuling was his fellow-boobie at school, and is now distinguished as a musician at Vienna.

Liebig remained only ten months at the apothecary's in Heppenheim, near Darmstadt, finding that chemistry, as a science, was as far off as ever in that mode of proceeding. After six months' preparatory study at home, he went to the University of Bonn, then to Erlangen, studying under Kastner in the latter place.—Here he became acquainted with many who followed different as well as similar pursuits; and the influence of the lectures of Schelling he has often expressed to have been strong, and to have been hurtful to him in the study of physics; but probably the elevated sentiments of Schelling have not been without advantage in raising the character of the chemist, and giving it that extended influence and those higher tendencies, unknown to its earlier followers. To keep alive his knowledge and sharpen his reasoning powers on the subject, he formed a society among the students of Bonn and Erlangen, for discussing chemical and physical subjects. We have been unable to procure the first papers written by him whilst at Erlangen, on the action of alkalies, on fulminating silver, and on some coloring matters; both are types of his future labors, as he has shone so much in illustrating the action of bodies, which seem to act by laws somewhat different from the ordinary attraction then known. We are not informed by what channel the talents of the young man were made known to the Grand Duke Lewis I. of Darmstadt; but in 1822 he was liberally furnished by him with means to prosecute his studies in Paris. Here he attended Gay Lussac, Thenard Dulong, and others, and made acquaintance with the principal chemists now his cotemporaries in Germany. His talents having recommended him to De Humboldt, many advantages in the prosecution of his studies and his investigations were given him; and a more intimate acquaintance with Gay Lussac, caused by the recommendation of the same great philosopher, was followed by an investigation into the fulminates; a work which had for some time engaged his attention, and which was now undertaken in the private laboratory of Gay Lussac, and published under their joint names.

In 1824, in his twenty-first year, by the recommendation of De Humboldt, he determined to teach the science, and took means to obtain the necessary degrees. He was, in the same year, made extraordinary professor of chemistry at Giesen, and in two years after, ordinary professor. The place of extraordinary professor is that of lecturer or tutor, and is the first step made towards a professorship in Germany. There the station of professorship is fixed upon by young men, and they follow it step by step as they would any other occupation, and is not, as here, the chance result of patronage and hard-earned fame, although they felt it necessary to labor hard to find a claim, and they are seldom fixed upon before having made themselves somewhat known. They are, however, generally taken out of this body. Were I to give a list of the labors of Liebig in chemistry, it would be too long for this article, and at the same time uninteresting to all but chemists. He was tutored into fitness to speak on organic combinations, as may be seen from the investigation made into such substances as hippuric acid, which he discovered, kinic acid, camphor and camphoric acid, lactic, malic, and aspartic acid, with their products of decomposition; in many instances tracing them from the highly organized state to the lower, where they approach more inorganic compounds. We see this especially in his investigation of ether, alcohol, aldehyd, and the numberless compounds of cyanogen; whilst the more purely organic part, such as sugar, was not forgotten.

Professor Liebig is a great admirer of our distinguished chemist, Davy; and the lives of the two are intimately connected as far as science

goes. When examining the nature of hydrochloric and hydriodic acids, Davy gave it out as probable that the acidifying principle is not, as was supposed, oxygen, but hydrogen. In the above-mentioned acids it is easily seen, and he wished to extend it to others also. Liebig, in his inquiry into the nature of organic acids, has found a wider range of comparison, and has set in a point of view which few persons are now inclined to contradict, and which all must find to be a beautiful explanation of an extensive class of natural appearances.

He says, "hydrated acids are compounds of one or more elements with hydrogen, in which hydrogen may be replaced by metals."

If an acid be so constituted, the hydrogen, capable of being replaced by a metal, is the true measure of the capacity of saturation; the remaining elements may then be termed the *radical*, as chlorine or iodine in the cases of hydrochloric and hydriodic acids. If this be the case, any addition of elements to the radical will have no effect on the capacity of saturation.

"But if the hydrogen increases or diminishes, the capacity of saturation increases and diminishes in a like ratio."

"If the above definition of a radical be correct, we see that any addition to it will have no effect on the capacity of saturation of the acid, so long as the amount of hydrogen remains unaltered."

In conformity with this principle, he has used in his work on organic chemistry this formula for acetate of Soda—for example, $\overline{A}c$ Na 0;—whereas, we are accustomed generally to use base first, as Na 0 × So 3, for sulphate of soda. This theory has also been fully extended by Professor Graham, who has taught us the true position of water and bases in inorganic salts, and has termed sulphuric acid sulphate of water, just as green vitriol is termed sulphate of the oxide of iron. The first is So 3 × H 0; the second, So 3 × Fe 0; the iron in one takes the place of the hydrogen in the other. But this subject is not one likely to be of much practical use at present. The substitution of the alkalies is of more interest.

An idea prevails among us that Liebig is a farming chemist only; that his greatest pleasure is to see beautiful fields manured in a chemical manner, and growing wheat and turnips according to the exact methods which he has laid down. In this we are mistaken; Professor Liebig is a philosopher, or, according to the German expression, a searcher of nature; and the great experience which many years devoted to organic chemistry had given him in the modes of operation of such bodies, whilst it peculiarly fitted him for investigating agricultural and physiological subjects, naturally also led him into them. At the earlier part of this century the *laws of combination* were developed. The chief workers in this field are still living—numerous compounds were formed and obtained formed in nature; but inorganic chemistry was chiefly studied, and the most highly organized substances were treated in the same manner as compounds of sulphuric acid and iron, or any other mineral substance. Boyle, or rather the chemists of his time, analyzed a piece of green wood by putting it up the chimney, when it burned, and they perceived four elements—fire, air, earth, and water—which we are apt to say were combined by a vital vegetable principle: one of these facts is as near the truth as the other, for facts we may call them, as, however imperfectly expressed, they fall within the borders of received truth. If we analyze organic compounds, and obtain from them instead of fire a certain amount of specific heat; instead of air, a certain amount of nitrogen; and, instead of earth and water, a certain amount of phosphates, silicates, oxygen, and hydrogen: we express the true compositions of the body more accurately than the friends of Boyle, but we are no wiser as to the laws of growth and decay, no nearer to the principles which vitality employs to exhibit its various appearances; because vitality itself had ceased prior to the view which we have obtained of the elements employed in its service. If, however, having collected these facts, having obtained a knowledge of the complex organic compounds which are used for the phenomena of life, we begin to observe their action towards each other, we have ascended into a region as far above the former, as the complicated machinery of kingdoms, such as England, France, or Germany, is above the simple relations of unsocial, independent, and walled villages of earlier times. The physiology of plants and animals is then a step in advance of the usually termed organic chemistry, and when we are taught the parts albumen or sugar play in the system, we have more knowledge and more power than when we can merely tell their composition. It is well known that this field has received from Professor Liebig the first cultivation—that the first regular crop was sown and reaped by his hands. It is vain for us to say that others before him saw so far; it is not unfrequently the case, that the end is seen long before any of the intermediate stations.—Absolute certainty often arrives before clear reasoning, and it is often hard for us to prove the most unquestionable truths. It is from this cause that many discoveries have been claimed for men who named them only, but could not prosecute them, that the dark hints given in ancient volumes have seemed to some men to indicate a superior knowledge to our days, that a metaphysical inquirer has been honored as the discoverer of the atomic theory, although ignorant of chemical combination; and Egyptians been made the discoverers of the laws of acoustics, because they had an image which emitted sounds, by laws which we have not yet learned to put in motion.

Davy said, "The laws of mind are probably not far different from the laws of corpuscular motion; every change in our sensations must be accompanied by a corresponding change in the organic motion of the body."

This he said when but a youth, and it is a very good instance of the mode in which immense series of discoveries are often anticipated by speculative men. It not only may be said to include what has been discovered, but grasps at much that we may safely expect some day to be known. It anticipates the time when the action of our feelings on the system shall be perfectly known, and almost leaves as an insignificant thing the action of the food, of the air, and of exercise. To teach us how to find some of this knowledge, and to give us the first fruits, has been the task of Professor Liebig: and already has the whole of this country, with many others, arisen unanimously, to express by the most energetic action, the lively impression of truth, which the principles taught by him have made upon them. The farmer no longer supposes that barren land can become fertile by dipping the seed to be sown in a solution of a salt,

and the physician no longer expects that he can feed a child, without disastrous consequences, on mere starch or arrow-root. The fact is now established, that land without the elements of fertility, must have them given to it, before it can be fertile; and that to form nerve or muscle in the body, food containing their elements must be taken.

If it be said that to the study of physiology a knowledge of the composition of organic bodies was an important preparation, it may also be added that a knowledge of the elementary composition of bodies was much more easily obtained by the facilities of analysis introduced by Liebig.

Many persons may have seen attached to one of his best portraits, which was lithographed at Frankfort five years ago, a small crooked-looking apparatus on one side of him, in which five globes with white spots on them are the principal things seen: this is the potash apparatus, a series of bulbs in which caustic potash is put to collect the carbonic acid passing from the decomposing organic matter undergoing analysis. It is scarcely right to connect his name in such a marked manner with an invention so much inferior to his many other labors, but that also speaks a truth not to be forgotten easily, and makes us believe that the gratitude of one who had labored with little profit at less elegant apparatus had offered this to him, although on an unlucky part of the sacred niche.

As a life spent like that of Professor Liebig can offer little for the writer, unless what is either directly or indirectly connected with science, it will be better for us to look over that which he has done, and to give the true reasons of the great name he has acquired.

The chemical section of the British Association desired him to prepare a report on the state of organic chemistry. If we look at the work which resulted, well known under the title of "Chemistry in its applications to Agriculture and Physiology," we perceive, that in considering the state of organic chemistry, and collecting the information on the various branches it includes, he was led to generalize; and by embracing many phenomena as he did in a few simple ideas, he has given us a resting place hitherto unforseen; and although the vanguard only may have arrived in quarters, and room be not ready for every arrival, it is no more than we must always expect, as another march must sooner or later be made. "He has endeavored to develop in a manner corresponding to the present state of science, the fundamental principles of chemistry in general, and the laws of organic chemistry in particular, in their applications to Agriculture and Physiology, to the causes of fermentation, decay, and putrefaction, to the vinous and acetous fermentations, and to nitrification. The conversion of woody fibre into wood and mineral coal, the nature of poisons, contagions, and miasmas, and the causes of their action on the living organism, have been elucidated in their chemical relations."

This is somewhat more than the association expected of him, an analysis of the existing theories and facts would have satisfied them.

It may be useful to repeat some of the more striking parts of it:—

Plants are formed of carbon, hydrogen, oxygen and nitrogen, phosphorus, sulphur, and several metallic oxides, such as those that occur in soil. Carbon and hydrogen are never absent from plants—they are found in every portion of the plant, and increase together; oxygen is present almost as generally, and constitutes a large portion of the fibre of wood, and of the nutritive portion of the plant. The oxygen contained in woody fibre, sugar, gum, and starch, that is in the much larger portion of the vegetable world, is in the same proportion to the hydrogen contained, as in water; that is to say, if we take the hydrogen and oxygen from them, the compound obtained will be simply water, and carbon will be left; they may then be said to be compounds of carbon with water, although there are many objections to viewing them in this light. Nitrogen is a constituent of all gluten, albumen, and casein, substances essential to our food; along with it sulphur and phosphorus are always found, and several metallic oxides, such as lime, magnesia, iron oxide, soda, and potash, are never absent. Whence do all these substances come, may now be asked? First, the carbon: it was long supposed to be given to the plant by means of humus: humic acid, or ulmic acid, a known matter to be seen in mould, and to be obtained in large quantities from decayed woods, and other vegetable matter. Rich mould was generally seen to contain a great deal of this; and it was supposed that the plants imbibed it merely, and digested it: that this could not possibly be the case, is shown from its almost insolubility in water.

Humus has been analyzed by various persons—none, however, have come to certain results; the differences amount to as much as twenty per cent. of carbon; but they all agree in giving it a large portion. We can form it artificially in various ways; that is, by various decompositions of organic matter, by treating woody fibre with alkalies, or sugar and starch with acids.—It is organic matter approaching an inorganic state, and in which we may consider vegetable life to be entirely extinct. Vegetables, when they die, undergo decomposition; by means of the oxygen of the air they are gradually burnt, the carbon unites with the oxygen, the hydrogen and oxygen assume the usual form in which they exist, uncombined with carbon, viz: water; and as this takes place, the remaining mass approaches more and more an unorganized charcoal merely. Such a condition is highly favorable to its farther union with oxygen, the bond which held it together, its vegetable life, being now gone, it naturally returns to the state in which only it can be useful to other plants, viz: carbonic acid. It is a destruction of our analogies to suppose that a vegetable can live on the decayed matter of another; the true position of the plant seems to be to form from the mineral world organized matter.

Glauber, an old chemist, if not alchemist, of the seventeenth century, was the first to observe that plants fed on any of the gases or earths. It is remarkable that no one has attended to his discoveries; he placed a plant in a jar of carbonic acid gas, and found, after a time, that the gas had become oxygen. It is right that in mentioning the works of the present day we should not forget the labors of the past. The time will come when two centuries will be a distance too small to be regarded, and Glauber, Saussure, and Liebig, will be mentioned more as co-workers, than as a series of workers. The same chemist also taught the value of several mineral salts in growing plants. But after the composition of carbonic acid was known, Saussure, Davy, and others have shown that carbonic acid is converted by plants into oxygen gas, a suffi-

cient proof that they have formed their structure from it. Saussure showed that the upper strata of the air contained more carbonic acid than the lower—a fact, the contrary of which is generally believed; also, that by night there is more carbonic acid in the atmosphere than by day.—Now, plants in the absence of light, are incapable of converting the carbon of carbonic acid to their own use, or at least in very small quantities, so that what they do absorb, or have absorbed, is given out at night unchanged. Of the sources of oxygen and hydrogen in plants, not much need be said here. The fact of the decomposition of water, in order to obtain a surplus of hydrogen for certain compounds, such as the oily, resinous, &c. seems beyond doubt, and the presence of oxygen in the plant can be accounted for in several ways. The assimilation of both of these substances presents phenomena very instructive; but that of nitrogen being somewhat more so, and having given rise to the most original theories and extensive discussion, may with advantage be looked to for a moment. It is well known that Davy considered ammonia as of great importance in manures, and proposed plans for preserving it; but having given him his due, and not forgetting our friend Glauber, who saw this thing as clearly as any man could, unacquainted with modern analysis, we must now give the rest of the praise to Professor Liebig, who showed that it is the inorganic state into which azotized organic matter enters to render it capable of a second organization; and that whilst Nature uses the atmosphere as a reservoir of the *decompoxed*, she likewise uses it as a reservoir of food for the *composing* vegetables.

If ammonia be the last product of the transformation of azotized bodies, it is, of course, to be looked for in the atmosphere. As ammonia is very soluble in water, it must be then washed down by the rain; and after a long drouth we may expect that the rain will wash down a considerable quantity. The ammonia was looked for by Professor Liebig in a shower of rain, and it was found; and it has even been obtained with the peculiar smell of organic matter attached to it. The quantity contained in the atmosphere has been estimated as one-quarter of a grain in 1,132 cubic feet. In hot climates the nitrogen is found combined with oxygen, so as to form nitric acid; since the full value of the nitrogen in these compounds has been seen, we have had a change, not in the theory merely, but in the whole practice of our farmers; and the trade occasioned by it has been sufficient to employ some hundred vessels at a time, and considerably to alter our ideas of the value of many waste products in the arts. Its indirect influence is no less valuable, as the guano of our own country, the waste matter of our own towns, husbanded as it ought to be, will not only be sufficient to supply the farmer when the foreign guano is spent, but the removal of it will purify our streets and our streams, and in no small measure add to our domestic comfort, and our sanitary condition.

The true valueof in organic matter, as manure, is especially insisted on by Liebig: the necessity for phosphates, sulphates, and silicates, has been a guide in the management of the rotation of crops, which will, when fully followed out, prevent much loss of time, and prevent any pity being thrown away on poor land, which we say is weary of such hard labor. Hard labor cannot be sustained without good food; this we must give the ground, and food is never so expensive as to be unable to pay itself by increase of strength.

Phosphates and silicates are the most necessary inorganic salts, which our soils in general want; sulphates are more easily procured in the form of gypsum. We may obtain phosphates by using bones, although a cheaper mode would be desirable; but silicates are certainly a desideratum, unless the professor has, in his present new manures, got over the difficulty.

It will, of course, be often said, as it has, indeed, been said, that this is not new. It will be useless to ask what is new, and what is not; as a system—as a whole, the connection between the vegetable and mineral kingdom has been so cleverly given, so many facts before doubted have not only been proved, but been shown to be necessary, that no one can look on it without admiring the artist, (if so we may term him,) by whomsoever and wheresoever the materials were collected; or, to use his own simile, he went into a cavern in which were a number of loose bones—he collected them, and formed thereby the perfect skeleton of a noble animal.

This may be said of a part of his work, and it may be said without fear, the original matter which he has brought forward is sufficient to make him careless as to small losses.

The principles of nutrition, as illustrated by him, are so beautiful, however unknown to many, and understood by still fewer, that it will not be out of place to give a short summary of some points. We see daily coming from the press such vigorous contradictions, in England chiefly by unscientific men, and in America by men at least pretending to science, that we know they are little understood. The analysis of albumen, casein, and gluten, are now known to have been made in the most accurate manner by Mulder, and others, and the composition of muscle is so well known, that we cannot hesitate in saying that the latter is formed from the former. They all contain a large proportion of nitrogen—no flesh can exist without nitrogen—be it the flesh of man or of beast, of fish or of fowl, nitrogen exists in it and in the same proportions. Now all our food must have nitrogen in it, else how could our flesh have it? We are continually giving out nitrogen from our bodies, and how can it be supplied again, but by a renewal of it in our food? It is a question too simple to require a lengthened explanation, now that the way is prepared for us, and the objections to it too trivial to require answering. In fact, it is now as well established as that food is at all necessary for us. No animal can feed on sugar, and live; can feed on starch or gum, and yet continue strong; these substances contain no flesh—they contain no albumen, which is the same thing. If a man says that he lives on sugar and water only, are we to believe him? certainly not. If he says that he becomes fat by eating sugar, we may believe him, because the elements of fat are found in sugar: but at the same time to support the other functions of the body, albumen, or a similar compound, must be taken along with it. Arrowroot, or starch, is sometimes taken, or rather was once taken, to support strength; but there is no readier mode of destroying strength than by giving for food a substance which does not contain the essential elements of muscle and of nerve, the organs without which strength cannot exist. True, children have been known to increase immensely in bulk by eating arrowroot only, but they have been

known also in the same period to lose both bodily and mental capacity, by the loss of brain and nerve, from a want of azotized matter in what they eat.

As nitrogen in the form of albumen, gluten, or casein must be eaten, and as these compounds are found in vegetables identically the same as in animals, except in their outward appearance, and as we know that there is no other form in which nitrogen can be obtained, we have a key by which we can find exactly how much of any given food is necessary to form a given quantity of flesh; at least we can tell the minimum, and can also tell the comparative value of different kinds of food. We can no longer dispute about the value of a potato, or say a given weight of potato is equal to the same weight of wheat; nor can we suppose that rice is equal to its weight of flour from wheat or of meal from oats. They are, no doubt, all valuable in their place, as all circumstances do not demand the same mode of treatment.

The analysis of the ashes of plants have furnished, also, an important lesson as to the capacities of soils. If a plant requiring a great deal of silica be put upon land containing little or none in a soluble state, the plant will, of course die, although the same ground may produce an abundant crop of potatoes, for example, which grow with little. The same may be said of lime, magnesia, soda, potash, although, more or less, they are always present. To give an idea of the variety in this respect, presented by the more common crops, a table is here added:

Silica Plants.	*Salts of Potash and Soda.*	*Lime and Magnesia.*	*Silica.*
Oat-straw, with seeds	34.00	4.00	62.00
Wheat-straw	22	7.20	61.05
Barley-straw, with seeds	19	25.70	55.03
Rye-straw	18.65	16.52	63.89
Lime.			
Pea-straw	27.82	63.74	7.81
Potato, (herb)	4.20	59.40	36.40
Meadow clover	39.20	56	4.90
Potash.			
Turnips	81·60	18.40	
Beet-root	88	12	
Potatoes	85.81	14.19	
Sunflower	84.30	15.70	

To try to grow any of these plants on a soil void of potash, soda, lime, and magnesia, will of course be a fruitless occupation; but we may grow turnips and potatoes when we cannot grow corn. Corn requires a great deal of silica, especially for the straw, and a time of fallow is required in order that a certain portion should be made soluble by the atmosphere and other agencies. To carry out the deductions from these premises, is the business of the farmer; to establish the premises with respect to individual soils, is that of the chemist. It would be a great advantage to the Agriculturist to be able to obtain some idea of the nature of his soil by chemistry. A complete analysis is by no means necessary; a little practice would enable him to make many important observations as to the quantities of certain ingredients, without at any time using a balance, except in the first instance; that is in the amount of soil experimented on, which ought always to be the same. In this case the eye becomes experienced and its results in general are equal in value to the weighings of the balance It is true there are difficulties in the way, as even this small accomplishment is not, as we might suppose, easily obtained without some teaching. At least let us hope that the young will not grow old without it.

In looking at his works, we seem almost to have lost sight of the workman; and, if there be any test of greatness which will stand, it is this: to have done so much, and to have put so many in motion, that he himself need not guide the machine. To govern, the mind of the governor must be everywhere; with his sloth all is slothful, with his loss all is lost. But to teach men truth, and to make them understand, is to make what can reproduce itself, and form an endless series.

One of the most novel doctrines of Professor Liebig is that of poisons, contagions, and miasmata; and, however dark the subject now is, we may expect it to increase and multiply to a great extent. In such mysterious subjects, to make a theory with a foundation is a great deed; and the one alluded to explains so much, that it will no doubt be looked on by many as the most beautiful part of his work. It is remarkable that all the ideas which Dalton obtained on the state of atoms, in union and separation, were taken from the mechanical states of large bodies such as he could weigh and handle. His simple explanation seems now self evident, and we wonder that men should have thought otherwise; we wonder also that great men, such as Wollaston and Davy, should have doubted--should, in fact, have been unable properly to comprehend it for a long time. A law in mechanics has suggested a chemical action to Professor Liebig, which promises not much less than the theory of Dalton. "A molecule, set in motion by any power, can impart its own motion to another molecule with which it may be in contact." "We have seen that ferment or yeast is a body in a state of decomposition, the atoms of which, consequently, are in a state of motion or transposition. Yeast, placed in contact with sugar, communicates to the elements of that compound the same state, in consequence of which the constituents of the sugar arrange themselves into new and simpler forms—namely, into alcohol and carbonic acid.

"In these new compounds the elements are held together by stronger affinities than they were in the sugar, and therefore, under the conditions in which they were produced, farther decomposition is arrested. We know also that the elements of the sugar assume totally different arrangements, when the substances which excite their transposition are in a different state from the yeast just mentioned. Thus, when sugar is acted on by rennet, or putrifying vegetable juices, it is not converted into alcohol and carbonic acid, but into lactic acid, mannit, and gum, or into butyric acid."

Yeast is a product of the decomposition of gluten; it passes into a second stage, in contact with water, gives to the sugar an excitement to decompose, and, if any gluten be present, it causes it to undergo the first stage of decomposition, and to pass into yeast. These conditions are found in the fermentation of beer, and, whilst one portion of the gluten is disappearing, another portion is being produced from the gluten.

That a body in a state of decomposition can communicate to another body a similar state seems, from these and many similar facts, to be proved; or, in other words, that a body in chemical motion acts in an analogous manner on surrounding particles to a body in mechanical motion. We see that, in the action of the yeast, the force is not exhausted, as, if material be present, a second portion is formed which can, of course, do the same work, and the end can be

arrived at only by the finishing of the material. What is the cause of this he is not required to explain; but it is a fact; it is the case is a great range of facts; it may be safely taken as unity, and called a power, when we bring many other phenomena under this head, we have arrived at a great point. The action of contagion is, in all appearance, similar. Matter in a state of decomposition comes in contact with healthy matter, and decomposition begins; this increases, and may be infinitely increased: we saw that with the yeast the power of increasing increased with the progress. How otherwise can we explain the insidious agency of the plague, lurking as it does about organic matter until it has accumulated such force, or until it has excited decomposition in such a large mass as to cause it to assume the form of a decided disease, and continuing until the whole frame is attacked, until the brain can no longer act rationally, but in the violence of its decay converts reason into madness? The same of fever and of other contagious disorders.

Putrifying flesh causes plagues of various kinds by the same law; decaying matter, placed near sound flesh, begins rapid decomposition in it; putrid gases from sewers corrupt fresh meat which is placed near, and mould rapidly communicates mould. The case of mould may perhaps be otherwise explained.

The dairy which is not clean cannot preserve milk well, and the dirtiest farmers see, at least, the use of attending to the cleanness of the wooden vessels there. Milk decomposing will cause other milk to follow it; and any matter not in a sound state—coming, for example, from dung-heaps—into the apartment by the open windows, will be productive of much mischief.—The position of a dung-hill is not an unimportant matter in a farm, and a stagnant pool also ought to be in a position in which it will do little hurt. Some houses have them just between them and the direction of the prevailing winds. On these occasions it is often difficult for persons unaccustomed to it to sit long in the place. The prevailing wind ought to be known before building a house, and everything that promises a disagreeable odor put on the opposite side. Ponds, much superior in cleanness to those generally near farms, have been known to influence greatly the healing of sores from this very cause; and, we may make it a rule, because it is in fact a law of nature, that animal and vegetable matter in decay should be removed as far from us as possible, that we may be able to eat sound food and to breathe pure air.

It would scarcely be suitable to this work to give an account of all Liebig's writings; much, however, might be gained by a study of the work on Pathology, by studying the nutrition of animals, the production of butter and of fat, the effect of heat and of cold. The phenomena of motion and theory of disease are more allied to pure philosophy, and, interesting as the subjects are, they find little attention among practical men. As a short compendium of organic chemistry, popularly treated, no work will please general readers so well as the Chemical Letters of Liebig: there every subject which has engaged practical chemistry to a great extent is touched upon, and, without much study, some idea may be formed of its nature.

To have received opposition and not to fall by it, is another characteristic of strength; and certainly no views, at least of very late years, have received more opposition than those of Liebig's. We are not now in the scholastic ages, and a new idea seldom takes up more of our attention than a few hours—a discussion we expect to be able to read in a short time, and to have done with it—nor could we find sufficient, in any public dispute whatever, to take us a journey of some hundred miles, even in an easy railway carriage. The opposition, especially in the French periodicals, has been great, although the London ones are certainly not to be left out.

It remains for us now to look a little more closely to the person whose life we are considering. Giesen, where he resides, is a small town, containing about 8,000 inhabitants; the population chiefly lives on learning, at least, almost all the respectable class are either judges, lawyers, professors, teachers, or students; and, as the students amount to 400, and the teachers to an almost equal number, we thereby nearly account for the whole male population of maturer years. This is certainly saying too much, but, at any rate, few towns of the size can boast of so many men of superior education. True it is, that many of our luxuries and conveniences are absent, but again the want of a market for surplus produce makes many very accessible, which to us are very expensive; and, if we may judge from the appearance of the people on Sundays and holidays, none are happier, and we should be obliged to go back to the days of merry old England before we could find such a group of happy English workmen. This is said merely to give persons some idea of what the place (of which no one seems to know anything) actually is. It has assumed the dress of peace, by substituting an avenue in place of a wall round the town, and several castles in the distance—skeletons of combative systems now gone by—tell us that it once was compelled either to suffer or to resist oppression. The rising ground near the town is now growing into a new, better-built, and better-situated town; and we doubt not that, where the cause of contagion has been so well taught, means will be taken to give every house a due supply of that light, heat, air, and cleanliness in general which our towns cannot always obtain, from the numbers of the population, and the expense of land, &c.

The university has flourished greatly, as Liebig has flourished, and the number of students working in his own laboratory amounts to about fifty; whilst a number attend the laboratory of Dr. Will, his former assistant. This is, then, the largest chemical school in the world, and it is richly endowed by the government. The smaller States of Germany seem to believe what in other places seems merely a problem not yet solved, that the education of a man is of the first importance, and that house and lands rank second, not first.

Of the honors gained by Liebig we all know a little, we know of his late visit to us in autumn, when he received as much attention as a country could give him; especially in Scotland. His own country has not forgotten him however; Austria and Prussia have both endeavored to obtain his services, and not succeeding there in spite of the most tempting offers, they have been content to honor him. His own government has made him Knight of the Hessian Order, and Russia, Knight of the Order of St. Ann: it need scarcely be added, that he is a member also of many societies. It may be well perhaps to finish this sketch by a quotation from Professor Gregory of Edinburgh, who is himself a phrenologist, and who introduced Liebig to the

principal phrenologists in Edinburgh, where his head was examined carefully. The great powers of observation are the first to strike us on looking at the head, and give a breadth over the eyes, extending as far as the ears, which we seldom see. Of particular organs I shall not speak.

"It may be interesting," says Professor Gregory, "to many of our readers to know that Professor Liebig is in person tall and well formed. His complexion is dark, his countenance is handsome, and in the highest degree animated and expressive. His cerebral development has been carefully examined by the Edinburgh phrenologists: it is of the very highest class, the intellectual and moral regions greatly predominating. Perhaps Europe does not contain a larger anterior lobe of the brain than Liebig's; and this, with his active and energetic temperament, point him out as one born to take a lead in science, and to give a new direction to the age. As a man, he is no less amiable than distinguished as a philosopher."

It is scarcely proper speaking of a living man to say much of his domestic life: to say he is married, or to speak of his children is more properly for a future time.

It may be that those who read this sketch will suppose that it is not sufficiently laudatory. It is unnecessary to praise any man, let us only tell what he has done, and the feeling of praise rises in every mind; here something of what he has done in Agriculture has been mentioned; if it has been clearly stated, those who see its value will not fail to give due credit to the man.

EXTRACT OF A LETTER FROM A GENTLEMAN IN THE SOUTH—*The sort of information needed there, with suggestions for Agricultural writers.*

——, Aug. 27, 1845.

Dear Sir—* * * As your work is large, I hope you will find room for articles particularly applicable to Southern Agriculture. All information about cotton and corn is, of course, valuable to us. Indigo and tobacco, particularly Spanish, are again attracting our attention.—Muck and marl are two hobbies with me, and to these, together with draining and making manure, I devote one-third of my effective force, *the year round.* I have been doing so for three years, and have just arrived at the point of making more with the other two-thirds than I did formerly with all. I hope to *pass it* very far in time, besides vastly increasing the value of my land.

We are very ignorant here of the labor-saving machines at the North. They have many in established use that we know nothing of. A list and description of all invented within 20 years, and in successful operation, with their prices, and where they may be had, would be very valuable. Indeed, a series of articles, stating and illustrating all the changes and improvements in Agriculture for 20 years, would be highly acceptable here. The old plan, the new plan, and the advantages of the change, would give us very important *truth.*

I wish you could reform agricultural writers in one important particular. They state their experiments in such a loose way that one can seldom try them. A man, you know, might describe a one-dollar bill and a ten-dollar bill from the same bank, very minutely, to his own satisfaction; yet, if he left out the trivial circumstance of the 0, we should not know that one bill was ten times as valuable as the other. We want quantities in bushels—distances in yards—areas in acres—in short, the length, breadth, depth, weight, measure, time, &c. &c. of every thing, minutely, accurately, and in terms understood every where. It is not only useless, but provoking, to read nine-tenths of the articles intended to enlighten agricultural readers.

From the American Farmer.

TO PREVENT SMUT IN WHEAT.

Since our own directions upon this important matter were written, we have received the annexed note from Hon. Wm. Carmichael, whose authority with us is equal to that of any agriculturist of our State:

SUCCESSFUL EXPERIMENT TO PREVENT SMUT IN WHEAT.

To the Editor of the American Farmer:

In the 3d vol. of the Farmers' Register, page 743, there is an account of a series of experiments made by M. M. de Bombasle, for preserving Wheat from the Smut, one of which he found entirely successful; and, perhaps, some benefit may be derived from an account of the advantage I have derived from its application. I recommend to you to subjoin that article, as it may give confidence to my experience.

Smut was brought on my farm by changing my seed Wheat, and though it never extended so far as to produce very serious injury, I was very anxious to expel it; and, in the year 1843, I used the means in the article I have referred to, according to the manner therein directed.—At the next harvest, I found the Smut much diminished, but some still remained. Last Fall I used the same means, under a different application. I dissolved, in a large tub, 18 lbs. glauber salts in 22 gallons of water. The Wheat was thrown into it well-washed, and so much of the solution as was not taken up was drawn off for farther application; the Wheat was then put into a bed of quick-lime (slaked immediately before being used) on my barn floor, well stirred so as to produce adhesion to each grain, and then spread to dry.

I have lately finished threshing. I have examined the Wheat and have not detected a Smut-ball. This is also the experience of my overseer and my most observant laborers.

I do not know that the germinating power would be injured if it remained unsown for many days under the lime; but to avoid the hazard, I have permitted the Wheat thus prepared not more than three days unsown.

My neighbor, Mr. Wm. De Coursey, to whom I communicated the experiments of Mr. Bombasle, made one with common salt, by which the Smut was much diminished, but some still remained. My experiment with glauber salts has resulted in entire success.

WM. CARMICHAEL.

Wye, Queen Ann's Co., E. S. Md.

FROM NATURE BY T.B. THORPE ESQ OF LOUISIANA.

LITH. OF D. & W. INDICOTT N.Y.

THE COTTON PLANT.

1. The blossom.
2. The Flower.
3. The same flower. Second day.
4. The same flower at night.
5. The "burr," or involucre.
6. The young boll.
7. The boll bursting.
8. The boll nearly ripe.
9. The boll ripe, cotton perfect.
10. The cotton blown by the wind.

Farmers Library Sept. 1845, J. S. Skinner, Edt.
New York, Published by Greeley & Mc Elrath, Tribune Buildings.

THE COTTON PLANT....ITS HISTORY AND USES.

It would have been better that the plate of the Cotton-Plant, which embellished the September number of the Farmers' Library, should have been accompanied with the following very interesting and learned essay on the origin, cultivation and uses of Cotton, by the distinguished President of the South Carolina Agricultural Society; but that whole number was in type before we found ourselves obliged to substitute that plate for another which had been prepared.

This essay serves, in its way, to illustrate one leading feature in the design of the Farmers' Library, which is, not only to instruct the young Farmer in all the practical details of his pursuit, but to improve and liberalize his mind, and to qualify him, as a man of varied information, to hold his proper rank in society. To do this, it is indispensable that he should make himself familiar with the natural history and uses, not only of the plants that he cultivates and the animals that he rears, but with all the objects that belong to the country, and that naturally become subjects of inquiry and of conversation among country gentlemen of any pretensions to intelligence and scholarship. All this knowledge may be gained, and all this intellectual respectability and enjoyment be secured, during hours of leisure which are now, by many of them, spent in a manner worse than unprofitable, at country taverns, or in scenes of low and vulgar excitement and dissipation; or they may be secured in hours of confinement at home, which, for want of books, or the love of books, (to be begotten in early life,) are whiled away in listless ennui.

What Mr. Seabrook has done to enlighten us as to the history and uses of a plant which forms one of the great staples of the country, shall, in time, be done for every tree of the orchard and the forest—every grain of the field and every vegetable of the garden. Every vine shall tell its own history, and every bird shall sing its own song, until, in place of the sneer of ignorance at the suggestion of *rural literature!* he who reads, and properly appreciates his position, shall be forced to ask himself—Where do the literary studies and researches that properly belong to rural life end? What do they not embrace of all that is worthy of being known?—until, in a word, speaking in the fullness of his heart, he shall say:

"And this our life, exempt from public haunt,
Finds tongues in trees, books in the running brooks,
Sermons in stones, and good in every thing."

We could, for the present, ask no better exemplification of our views than is presented in the following:

A MEMOIR ON THE ORIGIN, CULTIVATION AND USES OF COTTON, from the earliest ages to the present time, with especial reference to the Sea-Island Cotton-Plant, including the improvements in its cultivation, and the preparation of the Wool, &c. in Georgia and South Carolina: Read before the Agricultural Society of St. John's Colleton, November 13th, 1843, and the State Agricultural Society of South Carolina, December 6th, 1843. By WHITEMARSH B. SEABROOK, President of the State Agricultural Society of South-Carolina.

COTTON,* from the Arabic word Kotôn, is the spontaneous production of all the intertropical regions. Of the four great materials designed by Providence for human clothing, it is believed that none was assigned to Europe. To Asia was given all—Cotton, flax,† the sheep,‡ and silk worm;§ and to Africa and America, Cotton and flax. It is remarkable, too, that of these, the one which was obviously designed to be the most extensively useful, was the last to be generally diffused. For many centuries the growth and manufacture of Cotton were confined exclusively to India. The total silence of the Hebrew writers, and the very slight notices to be found in Greek and Roman‖ literature concerning the wool-bearing shrub,** are to be ascribed to the utter unacquaintance of the nations bordering on the Mediterranean with the populous coun-

* German *Kattunwölle, Baumwölle;* Dutch, *Ketoen, Boomwol;* Danish, *Bomald;* Swedish, *Bomull;* Italian, *Cotone, Bombagia;* Spanish, *Algodon;* Portuguese, *Algodno, Algodeiro;* Russian, *Chlobts-chataza bumaga;* Polish, *Bawelna;* Georgian, *Bomby, Bamba;* Latin, *Gossypium;* Greek, *Bombyx Xylon;* Mongul, *Kobung;* Hindoo, *Rúhi;* Malay, *Kapas;* Indian, *Kopa;* Chinese, *Cay-Haung, Hoa-Mien.*—Skinner, the etymologist, says that Cotton is so called from its similitude to the down which adheres to the quince, *malis cydoniis*, which the Italians call *cotogni*, and *cotogni* manifestly *a cydonis.*

Gossypium, or Cotton, a genius of the polyandria order, belonging to the monodelphia class of plants; and in the natural method of ranking under the 37th order Columniferæ.

[*Encyclopædia Britannia*, vol. 8. p. 21.

† Flax is indigenous in Egypt, and also in America.

[*Clavigero's Mexico*, pp. 25, 26.

‡ The sheep, (Ovis,) the Argali of Siberia. This animal inhabits the mountains of all Asia, and becomes as large as a fallow deer. It is from the Moufion, or the Argali, that we are supposed to derive the numerous races of our woolly animals, which next to the dog, seem most subject to vary.

[*Cuvier's Animal Kingdom, vol. 4th*, pp. 26, 27.

§ Silk was first made in China. Silk worms, with the art of manufacturing their produce, were brought from China to Constantinople by two Persian monks, in the reign of Justinian, A. D. 552.

‖ Virgil, in the second Georgic, clearly alludes to the Cotton Plant in the following lines:—"Shall I sing of the groves of Ethiopia, hoary with soft wool; and how the Seres," (a people of India,) "comb out the delicate fleece from among the leaves?"

** From its resemblance to the fleece of the sheep, the first material probably made into cloth, it was called the "wool of trees." In the markets of the world, it is designated "cotton wool."

tries beyond the Indus. Even after a considerable traffic had grown up between Rome and the East, Cotton, as a textile material, excited no particular interest nor more than a passing remark by the scientific inquirer. In the omission also of the writers of the middle ages to mention cotton stuffs, while enumerating the vestments in common use, it is to be inferred that woolen, linen, and silk, of which they continually speak, then constituted the customary wear of the people. We learn from Nearchus, Alexander's Admiral, who (327 B. C.) descended the Indus, that "the Indians wore garments, the substance whereof they were made growing upon trees; and this," he says, "is indeed flax, or rather *something much whiter and finer than flax.*" Herodotus, (445 B. C.) the father of history, evidently supposed that the Cotton Plant was limited solely to India. "The inhabitants of that country," he states, "made their clothes of the product of a certain plant, which, instead of fruit, produces wool, of a finer and better quality than that of sheep."

On the authority of Strabo, who was cotemporary with our Saviour, Cotton grew in the Persian province of Susiana. We are informed by Pliny, who lived about A. D. 75, that in the earliest ages, when Cotton fabrics were worn only by the Indians, the dress of the Babylonians was of linen and wool, and of the Egyptians, linen.* It was not until the Christian era that the introduction of the Cotton Plant into the country of the latter took place.† "In Upper Egypt towards Arabia," he says, "there grows a shrub called gossypium, by others xylon, from which the stuffs are made that we call xylina. It is small, and bears a fruit resembling the filbert, within which is a downy wool, which is spun into thread. There is nothing to be preferred to these stuffs for whiteness or softness; beautiful garments are made from them for the Priests of Egypt." The same writer enumerates, among the productions of the Island of Tylos, in the Persian Gulf, "wool-bearing trees that bear a fruit like a gourd, and of the size of a quince, which, bursting when it is ripe, displays a ball of downy wool, from which are made costly garments of a fabric resembling linen." It is probable, remarks a late writer, as the soil of Arabia is unadapted to the raising of flax, and the climate too hot for the fine fleece of sheep, that Cotton was applied to clothing purposes in the infancy of the human race. It is certain, however, that at the time of the Hegira, A. D. 622, cotton cloth was a common material of dress. The next authentic account of the Cotton Plant is derived from Marco Polo, who visited many countries of Asia as the confidential agent of the Tartar conqueror of China. He saw Cotton growing abundantly in Mosul, opposite the ancient Nineveh, in Persia, and at Guzzerat, in which latter place it was produced from a tree "six yards high, which bore twenty years." After the time of the Venetian traveler, but before the 14th century, the evidence is satisfactory, that the wool of the gossypium was the staple manufacture of Arabia, Persia, and all the Provinces on the Indus. Notwithstanding the proximity of China to India, and the commercial intercourse between them, it was not until the 11th century that the herbaceous Cotton, which four hundred years before had been raised in gardens for the beauty of its flowers, was grown for domestic use. So slow was its progress among the industrious and skillful people of that Empire, then distinguished for their knowledge of the arts,* that two centuries elapsed before it constituted one of the staple crops of the country. China is now an importer of the wool. About 70 years ago, the lands cultivated in Cotton, in consequence of the alarming scarcity of provisions, were appropriated to the raising of corn by command of the supreme authority.

Although Cotton is indigenous in Africa, and grows luxuriantly and plentifully, especially in its central and western parts, yet there are strong reasons for concluding that the knowledge of its husbandry was spread among the people of that Continent, north of the Equator, by the early followers of Mohammed. No authentic notices of the progress of its tillage exist until the 15th century, when it was not only extensively grown, but the fleece was manufactured, by the Caffres, by the Moors at Cefala, by the inhabitants of the coast of Guinea, and along nearly the whole northern shores of the Mediterranean.

Spain was the first nation in Europe that cultivated the Cotton Plant, and manufactured clothing from its produce. Both occurred in the 10th century. The Moors who were mingled with the Arabs at the Spanish conquest, says De Marlés, brought with them the husbandry of rice and Cotton, of the mulberry tree and the sugar cane. In the year 1050, the Priests of San Adveno were authorized to let their church lands for its cultivation. Soon afterwards it appeared in Italy, particularly along the shores of the Gulf of Taranto. It was then gradually extended to Greece and the adjacent countries. In the 16th century it was produced in the vicinity of Hyeres, and elsewhere in the southern parts of France.

Columbus, Magellan, Drake, Cavendish, Dampier, Van Noort, and indeed all the earlier voyagers, with one exception, concur in representing that, in the decoration of their persons, or where, from the coldness of the climate, some covering to the body was necessary, the aborigines of the Western Continent, among other materials, used Cotton. Several of them, moreover, saw "Cotton growing wild and in great abundance" in the West India Islands and on the Continent. The Patagonians tied up their hair with "Cotton Lace," and so plentiful was the vegetable wool in Brazil, that the inhabitants made their beds of it. In St. Salvador, where Columbus first landed, the Spaniards, who describe the women as dressed in short "Cotton coats," exchanged caps, beads, and other toys for "Cotton yarn." On this Island Cotton was seen "growing of itself." In the fabrication of Cotton and other cloths, the Mexicans displayed so much ingenuity and neatness, as to create a

* The microscopic examinations of Lewenhoeck conclusively show that the mummy cloth of Egypt was composed entirely of linen.

† The cultivation of Cotton had long been discontinued in Egypt, when Mehemet Ali, about the year 1823, renewed the enterprise with a spirit indicative of a vigorous and sagacious mind. The first year, 60 bags were produced; in 1836, as high as 180,391 bags were exported to Europe. Of late years the quantity grown has been inconsiderable, and as the culture of the crop depends on the capricious determination of the Pacha, no judgment can be formed of the future supplies from that country. (See Tables 3 and 4 in the Appendix.)

* The Chinese were the original manufacturers of silk, paper, and sugar. They, too, first practised the art of printing, and were the first acquainted with the properties of the magnet, and the composition of gunpowder.

doubt in the minds of their conquerors, whether the European artists could surpass or even equal them in that branch of industry. Among the presents sent to Charles V. by Cortes, were Cotton cloths of exquisite fabric, dyed in various colors. Even as far north as the Mes-chacebe, or Mississippi, the earlier explorers of that river and its tributary streams, saw "Cotton growing wild in the codd and in great plenty."* These facts, and they might be almost indefinitely multiplied, are introduced to rebut the opinion, founded on the negative testimony of Capt. Cook, that the gossypium is not a native of the Western Hemisphere. That celebrated voyager found no Cotton between New-Zealand, 36° South, and the Sandwich Islands, 20° North. In addition to flax and the bark of the mulberry tree, in which Capt. Cook says the inhabitants of those regions were habited, the natives nearly all over the continent certainly used, as articles of dress, besides Cotton, feathers, the wool of rabbits, the maguei, a fibrous plant, and silk grass.

The gossypium was cultivated by the Dutch in Surinam in 1733. The precise time of its existence, as a staple commodity, in the West-Indies is uncertain, though it probably occurred early in the 17th century. The presumption is against its having been the produce of Hispaniola as early as 1562, as William Hawkins, the Englishman, who carried to that Island a cargo of negro slaves, the first ever brought to the Western world, received in exchange for them only, "pearls, hides, sugar and ginger." From a few of the tables of exports, to which alone on this head access has been had, it appears that, in 1726, Cotton was one of the staple crops of Hispaniola,† and that, in 1753, Jamaica exported 2000 bags, and, in 1768, to Great Britain and Ireland, 2211 bags of 200 pounds weight, and to North America 252‡ bags On an average of eight years, from 1740 to 1748, among the exports of Barbadoes 600 bags of Cotton are included. In 1787, the Islands of St. Domingo,§ St. Christopher, Grenada, Dominica, Antigua, Montserrat and Nevis, and the Virgin Islands, were exporters of this commodity. Before 1803, in which year Jamaica did not grow one bag for exportation, there were five varieties of gossypium planted in the West-Indies, viz: the common Jamaica, the brown-bearded, the nankeen, the French or small seed, and the kidney or Brazil Cotton.‖ The interest on capital in the raising of the lowest priced Cotton in the British West-India Islands in 1785, '86 and '87, was 14 per cent.,** but in St. Domingo, where finer Cotton was produced, applying the same calculations, it was 24 per cent.††

The materials for obtaining a correct knowledge of the ancient general history of Cotton are so meagre that the short account just concluded embraces substantially all that is known on this interesting subject.

Of the two kinds cultivated in the United States, the green seed or short staple Cotton* is derived from the Herbaceum or herbaceous Cotton, and the Hirsutum or hairy American Cotton; the long staple or black seed Cotton† is derived from the Arboreum or tree Cotton. The former was certainly grown in Virginia, in a limited way, at least one hundred and thirty years before the Revolution. Several of the early Governors of that Colony used diligent efforts to secure the fabrication of certain articles, which, it was believed, it could profitably raise; and the introduction and culture of new crops, among which was Cotton; but their designs were thwarted, as well by the unjust and tyrannous conduct of the mother country, as by the opposition of the tillers of the soil, who, in a matter so important to themselves, had the boldness to consult what they held to be their true interests. Sir William Berkley, his Deputy, Francis Morrison, and Sir Edmund Andros, were particularly prominent in not only advising the people to diversify the products of the field, but to engage in the manufacture of hemp, flax, salt and potash.‡ Resolved to make a commercial profit of the plantations, Cromwell, by his celebrated navigation act, prohibited them from receiving or exporting any European commodities, but what should be carried to them by Englishmen or English built ships. They were absolutely forbid corresponding with any nation or colony not subject to the crown of England. The restraints proving ineffectual, another act in the reign of Charles II. was passed, by which the Colonies could have no foreign goods, which were not first landed in England, and carried directly thence to the plantations. As the effect of these edicts was to raise the value of European goods, and depress that of tobacco, several abortive attempts were made by the Assembly of Virginia to prevent the planting of that crop for one year, and during that time to invite the people to turn their thoughts to manufactures, and the cultivation of other crops, Cotton included. Land being abundant, and obtainable on easy terms, and the belief prevailing that the mother country would soon remove all unnecessary restrictions on trade, and promote in a more certain and permanent form the culture of tobacco, they pertinaciously refused to divert their new capital into a new channel, and saw no necessity for adopting the last recommendation of the local government.

* A description of the English Province of Carolina, by the Spaniards called Florida, and by the French, La Louisiana, by Dan. Coxe, pp. 81, 82.

† Burke's Account of the European Settlements in America, p. 15.

‡ Edwards' West-Indies, vol i. p. 257.

§ On an average of the years 1787, '88 and '89, the exports of Cotton from the French part of St. Domingo, were 6,698,858 lbs.

‖ The first import of Cotton into England from the Brazils, was in 1781.

** Edwards' West-Indies, vol. iii. p. 95. This large interest was the result of the prices, viz: 1s. 3d. sterling per pound, and not the production, which averaged only about 100 lbs. per acre.

†† *Ibid.* The price of the Cotton wool of St. Domingo was 2s. per lb.

* It should be called, says Dr. Ure, *fruticosum*, shrubby, because its stem is woody and not herbaceous. It is distinguished from the other species of gossypium by having the five lobes of its leaves rounded and terminated with a sharp point. Its capsule is three or five-celled; each cell contains about five seeds of an ash color. The stems, which increase in hardness and size with the heat of the climate, are somewhat reddish near their lower part, velvety or hairy towards the top, and variegated with black points. The branches are short; the leaves green, soft, pretty large, and divided into five short lobes. The axillary peduncles towards the extremity of the boughs end in a large beautiful yellow flower; the three leaflets of the flore, or cup, are large, and deeply-toothed on their edges. [*Ure, pp.* 63, 64.

† Calyx cup-shaped, obtusely five-toothed; inclosed in a three-cleft exterior calyx; the leaflets united at their base, of a heart-shape and toothed; stigmas three to five; capsule three to five-celled, and many seeded; seeds bearing a downy wool. [*Ure. p.* 60.

‡ History of Virginia, by a native and inhabitant of the place; published in 1722,—pp. 50, 90, 92.

The "paternal command" of Charles I. that the planters should make no more than 100 lbs. of tobacco per man, on the ground that he could not afford to give them above 3*s.* the pound for it, they had affectionately resisted so far as the obstacles in their way permitted them: it was not, therefore, to be supposed that they would now curtail their field labors in relation to their favorite product, the foreign demand for which was annually increasing. When, however, necessity constrained them to try the expedient of fabricating cloth, other than hemp and flax, for family use, strong opposition was quickly manifested. Francis Nicholson, Governor of Virginia, in 1698 "recommended to Parliament to pass an act forbidding the plantations to make their own clothing; in other words, that the planters shall go naked."* In reference to Carolina, the conduct of the Colonial authorities to the planters was perhaps unexceptionable. From physical causes, their labor, it was foreseen, could never come in competition with that of Britain. From the inaptitude of Europeans for the labor requisite in such a climate, and more especially for the crops suitable to the soil of an uncleared and heavily-timbered country, added to the utter ignorance of many of the emigrants in the art of Agriculture, and the unacquaintance of all with the productions most likely to reward their labor, the early settlers, though living in a higher latitude, continued to cultivate the same crops in Carolina that they had done in England; and thus, by exhausting their strength in fruitless struggles, continued poor, whilst the best lands were procurable at the rate of one thousand acres for twenty pounds sterling. Insensibly, however, they engaged in that department of husbandry, which, while it required little exposure and personal strength, served to supply England and the West-Indies with such articles as they respectively needed, in exchange for what the Colony was unable to produce.† The raising of silk was introduced into the country by Sir Nathaniel Johnson about the year 1703. The mulberry being an indigenous tree, and the great demand for silk in England, concurred to render this an encouraging branch of industry. In 1759, 10,000 lbs. of raw silk were produced in this State.‡ The growing of rice§ followed the business of making tar, pitch and turpentine, that had long been one of the principal employments of the land-owners. To this, about forty years afterwards, was added indigo,* which was soon extensively grown in certain locations, where it continued to be the sole staple commodity until the tobacco culture began to be attended to. Although the climate and soil were experimentally known to be well adapted to the Cotton Plant, yet, as before the introduction of negroes, other crops had employed the time of the planters, when that event occurred, rice proved to be so lucrative a business that, from 1703, it engrossed their whole strength and attention.

In the infancy of the Colony, the advice of the Trustees of Georgia to the planters to cultivate the vine and mulberry to make wine and silk, because "in work of that light kind, poor women and children might be usefully and advantageously employed," was generally unheeded. Like their more northern neighbors, they obeyed the dictates of their own will, in the belief that their sagacity would soon discover the shortest way of arriving at the goal of their desire. They continued, therefore, in the vocation of growing rice and indigo, and providing naval stores for the West India and English trade until the breaking out of hostilities with the mother country. In that year, while a Cotton patch was no unusual spectacle, Col. Delagall, of South Carolina, who had joined Gen. Oglethorpe, as Lieut. Delagall, cultivated thirty acres of the green seed kind, near Savannah.

In a pamphlet of the date of 1666, entitled "A Brief Description of the Province of Carolina, on the Coast of Florida," the writer, in speaking of the Cape Fear settlements, made only two years before, says they have "indigo, tobacco, very good, and *Cotton wool.*" Dr. Hewitt, in his historical account of South-Carolina and Georgia, while commenting on the introduction of silk into the former, and the products of the earth for which premiums ought then to have been given to those who should bring to market the greatest quantities of them, alludes particularly to Cotton, and, after detailing the manner of planting it, remarks that this article, "though not of importance enough to have occupied the whole attention of the Colonists, might, nevertheless, in conjunction with other staples, have been rendered profitable and useful."† In Wilson's account of the "Province of Carolina in America," published in 1682, it is stated that Cotton of the Cyprus and Malta sort grows well, and a good plenty of the seed is sent thither."‡ In Peter Purry's description of the Province of

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* Idem, p. 92.

† To Great Britain were exported furs, deer skins, rosin, tar, pitch, and raw silk, in exchange for woolen, cotton and silk goods, arms, ammunition, and agricultural implements; to the West-Indies, beef, pork, butter, candles, soap, tallow, myrtle wax candles, pitch and tar, cedar and pine boards, shingles, hoops, staves, and heads for barrels, in return for rum, molasses, sugar, Cotton, chocolate made up, and cocoanuts.

† To a very rich satin damask, now in the possession of Mrs. F. Rutledge of Charleston, the following memorandum is affixed:—"In 1753, Mrs. Pinckney [see page 177] took with her to England a quantity of silk spun from worms of her own raising at Belmont, near Charleston. It was considered by the manufacturers equal to any imported from Italy. The quantity was sufficient to be woven into three dress patterns; one of which Mrs. Pinckney presented to the Princess Dowager of Wales, mother of George III.; another to Lord Chesterfield, the third she brought back to America."

§ A bag of rice was given to Landgrave Smith, in 1695, by the Captain of a Brigantine from Madagascar, that touched at Charleston on her way to Britain. The Governor divided the rice between Stephen Bull, Joseph Woodward, and some other friends, who planted their small parcels in different soils.—[*Hewitt's Historical Account of South-Carolina and Georgia.*

* In 1741 or '42, George Lucas, Governor of Antigua, sent to his daughter Eliza, afterwards Mrs. Pinckney, the distinguished lady previously alluded to, some seed, as an experiment. From its produce was made the first indigo that was grown in South-Carolina. In 1745, this plant was discovered growing spontaneously in the woods. Two years afterwards, a large quantity of indigo (from imported seed principally) was sent to England, which induced the merchants trading to Carolina to petition Parliament for a bounty on Carolina indigo.—*Hewitt.* The East is indebted to the Western continent for this plant. The high bounties of the British Government, assisted by the knowledge of a Mr. Gray, once the overseer of John Bowman of Charleston, who carried to Bengal the American mode of manufacturing the produce, extended its growth in India.

† Carroll's Historical Collections of South-Carolina, vol. i. p. 141.

‡ Idem, vol. ii. p. 84

Carolina, drawn up in Charleston, in 1731, "flax and Cotton" are said to "thrive admirably."*—On the journal of Mrs. Pinckney, the mother of Gen. Thomas and Gen. Charles C. Pinckney,†—who, as Miss Lucas, when only eighteen years of age, was entrusted with the management of the planting interest of her father, the Governor of Antigua—is the following memorandum:—"July 1, 1739—Wrote to my father, to-day, a very long letter on his plantation affairs—on the pains I had taken to bring the indigo, ginger, *Cotton*, lucerne and casada to perfection, and that I had greater hopes from the indigo than any other." "June, 1741—Wrote again to my father on the subject of indigo and *Cotton*." It is a well-authenticated fact that, in 1736, as far north as the 39th degree, Cotton on "the garden scale" was raised in the vicinity of Easton, in the County of Talbot, on the Eastern Shore of the Chesapeake Bay.‡ About forty years afterwards, it was cultivated in St. Mary's County, Maryland, and in the northern County of Cape May, in New-Jersey; also in the County of Sussex, in Delaware. Mr. Jefferson, in his Notes on Virginia, written in 1781, says:—"During this time we have manufactured within our families the most necessary articles of clothing. Those of Cotton will bear some comparison with the same kinds of manufacture in Europe; but those of flax, hemp and wool are very coarse, unsightly and unpleasant." A short time before the Revolution, a few of our planters, by growing patches of Cotton, some of which was of the black seed kind, succeeded in clothing not only their families, to which they had been accustomed, but also their slaves. The necessities of the War, and the state of things existing for some time after it, greatly increased the number of the domestic fabricators of the wool, until about the year 1790, when the practice of using homespun for plantation purposes became very common in the districts and upper parishes.—The yarn was spun at home, and sent to the nearest weaver. Among the manufacturing establishments, the one in the vicinity of Murray's ferry in Williamsburg, owned by Irish settlers, supplied the adjacent country. The Cotton for the spinning process was prepared in general by the field laborers, who, in addition to their ordinary work, picked the seed from the wool, at the rate of 4 lbs. per week.

At the Convention at Annapolis, in 1786, Mr. Madison, in a conversation with Tench Coxe, concerning the Cotton husbandry, remarked that, "from the garden practice in Talbot, and the circumstances of the same kind abounding in Virginia, there was no reason to doubt that the United States would one day become a great Cotton-producing country." The evidence then existing on this subject—especially the interesting fact that, during our struggle for Independence, Philadelphia had been furnished with native Cotton, worth two shillings sterling per pound, enough for the limited home consumption; and the information communicated to Gen. Thomas Proctor, of that city, by Richard Leake, of Georgia—removed all doubt in reference to the practicability of raising the gossypium, as a crop, on a large extent of the Atlantic coast.—This conviction of the public mind soon insensibly led to the belief that the United States could also card and spin its fleece, and, probably, weave it by water power. The result was a mission to Great Britain, at the expense of Tench Coxe, to obtain the machinery, and all the information which it was important the parties should possess. The influence of a manufacturing society, established in Philadelphia in 1787, and the prevalent opinion that the raw material might be made a profitable source of revenue, induced Congress, at the first reformation of the Tariff, to impose a duty of three cents a pound on foreign Cottons,* with which the United States were at that time supplied from the West Indies and the Brazils.

That, in 1792, the growth of Cotton in this country was unknown to Mr. Jay, or that, as a commercial article, it was deemed of little value, is obvious from the fact that, in the treaty negotiated by him, it was stipulated that no Cotton should be imported from America; the object of that diplomatist being to secure to the English the carriage of the West India Cotton to its market in Europe. This is the reason why the Senate refused to ratify the 12th article of that treaty. In half a century how wonderful has been the revolution effected in the Cotton husbandry of the United States! In 1792, the entire crop was 138,328 lbs.; in 1842, 785,221,800 lbs. were produced.† The first Provincial Congress in this State, held in January, 1775, recommended to the inhabitants to plant Cotton, but their recommendation was almost entirely disregarded. The whole quantity of that commodity, prior to 1793, exported from the United States was inconsiderable, but in that year it amounted to 6,276,300 lbs.;‡ of this, the proportion contributed by South-Carolina was 1,109,653 lbs.§

Among the exports of "Charles-Town" from November, 1747, to November, 1748, are included 7 bags of Cotton wool, valued at £3 11*s.* 5*d.* per bag.‖ In 1754, "some Cotton" was again exported from South Carolina.** In 1770, there were shipped to Liverpool, three bales from New-York, four bales from Virginia and Maryland, and three barrels from North-Carolina.†† Before the Revolutionary War, Virginia exported, *communibus annis*, hemp, flaxseed, and *Cotton*, to the value of $8,000. In 1784, an American vessel that carried eight bags to Liv-

* Idem, vol. ii. p. 133. Peter Purry was a native of Switzerland, and the founder of Purrysburg. In the reign of George I. he presented a memorial to the Duke of Newcastle, then Secretary of State, in which he sets out with this postulate, that "there is a certain latitude on our globe, so happily tempered between the extremes of heat and cold, as to be more peculiarly adapted than any other for certain rich productions of the earth," among which he enumerates silk. *Cotton*, indigo, &c.; and he fixes on the latitude of 33°, whether North or South, as the identical one for that peculiar character.

[*Rees's Encyclopædia, vol. x.—Article Cotton.*

† See Notes, p. 176.

‡ American Farmer, vol. ii. p. 67.

* Niles's Register, vol. xxxii. p. 332.

† Of the imports of Cotton into Europe from North America, Egypt, South America, the East and West Indies, in 1842, amounting, in the aggregate to 2,924,463 bales, this country furnished 2,379,460 bales, or more than three-fourths. (See note A and table 4 in the Appendix.)

‡ The year 1793 includes some foreign Cotton in the export.

§ In Ramsay's History of North Carolina, the amount exported is erroneously valued at "1,109,653 pounds sterling."

‖ American Husbandry, containing an account of the soil, climate, productions and agriculture of the British Colonies in North America and the West Indies; published in London in 1775. Vol. i., p. 437.

** Drayton's Memoirs of South-Carolina.

†† Smither's Liverpool, p. 155.

erpool, was seized, on the ground that *so much Cotton could not be the produce of the United States.** In 1785, 14 bags; in 1786, 6 bags; in 1787, 109 bags; in 1788, 389 bags; in 1789, 842 bags; and in 1790, 81 bags were received in Europe from this country;† of these, 153 bags were sent directly, and a portion of the remainder by the way of Philadelphia and New-York, from Charleston.‡ The first bag of Cotton sold in South-Carolina, was purchased in 1784, by John Teasdale, from Brian Cape, then a factor in Charleston. The first bag of the wool exported from that city to Liverpool, arrived January 20th, 1785, per Diana, and was consigned to Messrs. J. & J. Teasdale & Co.§ The exports from 1790, though very much mixed up with foreign Cottons, slowly but steadily increased until 1794, when a powerful impetus was given to the Cotton culture by the invention of the saw gin by Eli Whitney, of Massachusetts.‖ This ingenious but unfortunate artist, who by his machine doubled the wealth and means of employment of his countrymen, and thereby in an especial manner conferred on the Plantation States a benefit that can scarcely be estimated in money,** was rewarded by South-Carolina, North-Carolina and Tennessee only. The first appropriated $50,000 for the use of his invention within her limits; the second laid a tax for five years of 2*s.* 6*d.* upon every saw in every gin that was mounted within its jurisdiction; and the last imposed a tax of 37½ cents upon every saw, to be continued for four years. Notwithstanding these liberal legislative acts, the inventor derived no pecuniary benefit from his gin. He expended the whole amount received from South-Carolina (from the other States he received a mere pittance) in defending himself against arbitrary and vexatious suits, and in prosecutions for violations of his patent right. Over the grave of this distinguished benefactor of the human race, a monument is erected, with this simple but expressive inscription—"The Inventor of the saw-gin."

It was not the design of the writer to speak particularly of the culture of green seed Cotton, as a crop, in South Carolina, but having gathered a few interesting facts concerning this great staple, he deems it his duty to present them to the Society. The history of this and the black seed Cottons is, indeed, intimately blended.—The growing of the former in this country for exportation was begun but a few years before that of the latter;†† the same machine for extracting the seed from the wool was for a long while employed; and the modes of cultivation and preparation, with one exception,‡‡ including the manner of packing the bag, were also the same.

As a preliminary point, it may be asked, whence came the seed of this Cotton, now so extensively cultivated in the United States?—This question is probably not susceptible of a positive and unexceptionable answer. That it was not brought from India is perhaps obvious. The policy of the East India Company, who obtained their monopoly in the year 1600, was unquestionably adverse to the exportation of Cotton seed. Indeed, the wool itself was not first exported by them. This was done by the privileged merchants in 1798. Individuals would scarcely have deemed it necessary to draw from the distant East that which was obtainable much nearer home, and of a quality, too, greatly to be preferred. As the trade in the raw material during the larger portion of the periods alluded to, was confined to the Mediterranean, it is a legitimate inference, in the absence of positive proof, that, from that quarter, the nations of Europe, owning possessions in the Western hemisphere, respectively introduced into them the new culture. This, perhaps, was especially true of the Low Countries and of England, as in 1560, the former constituted the dépôt of Cotton goods from the Levant; and the Turkish trade, of which Smyrna was the seat, was, at the time of which we speak, the most important to the latter. Peter Purry is represented to have brought with him, among other seeds, that of Cotton. This, and a paper of the same material, received by the Trustees for the settlement of Georgia, from Philip Miller, of Chelsea, England, it can scarcely be questioned, were from the Mediterranean. Mr. Wilson, already quoted, says expressly, that the Carolina sort was from Cyprus and Malta. In a pamphlet entitled "American Husbandry," published in London, in 1775, the writer remarks, that "the Cotton cultivated in our Colonies is of the Turkey kind." On the other hand, it must be supposed, from the language of their historian, that the Cape Fear emigrants, who began the growing of the gossypium only two years after they had established their settlemens, were provided with seed from Barbadoes. The vicinity of the West Indies; the profitableness of the Cotton crop; and the varieties of the plant, which, at an early period were cultivated in those Islands—all render it nearly certain, that from thence was drawn a portion of the supply with which the people were from time to time provided.

Between 1786 and 1795, Cotton from various parts of the world was introduced into the Southern States and Louisiana. A species of the white Siam was for some time the subject of experiment by the French in the latter country. The Nankeen came from Malta. The Bourbon was brought from that Island to Charleston, through the instrumentality of James Hamilton, who was a merchant, and part owner of the only India ship at that time trading beyond the Cape of Good Hope. The Pernambu-

* Smither's Liverpool.

† See note B. in the Appendix.

‡ Of the 14 bags exported to Liverpool in 1785, ten of that number were shipped from Charleston by John Teasdale. So short was the crop of 1789, that the high prices alone induced the planters to continue the cultivation of Cotton.

§ Smither's Liverpool—Note B.

‖ Mr. Miller, of Georgia, in whose house he lived at the time of the invention, was associated with Whitney in his labors. The letters patent bear date, October 28th, 1793.

** "If we should assert," said Judge William Johnson, "that the benefits of this invention exceed $100,000,000, we can prove the assertion by correct calculation."

†† In Georgia, the long staple cotton was first planted for market; in Virginia, South-Carolina and North-Carolina, the short staple Cotton.

‡‡ The bow-string operation. A large bow, made elastic by a complication of strings, is put in contact with a heap of Cotton; the workman strikes the string with a heavy wooden mallet, and its vibrations upon the knots of the Cotton shake it from the dust and dirt, and raise it to a downy fleece. The bow, says Mr. Baines, in his history of the Cotton Manufacture of Great Britain, has been used immemorially throughout all the countries of Asia, and has its appropriate name in the Arabic and other languages. In this country, he remarks, it was first employed in Georgia; hence the term, still applied in commerce, "Bowed Georgia Cotton."

co or kidney Cotton, was sent from the Havana to Mr. Levett, of Georgia, by a Mr. Welch, a merchant of Philadelphia. These, and many other sorts, after a fair trial, were abandoned, for the reason of their inferiority to the kinds then profitably raised, viz:—the real green seed, and the Sea Island Cotton; the latter having superseded the plant that was grown at the period of the Revolution, which strongly resembled the short staple in growth and blossom, except having a clean black seed with fur at the end. The Louisiana Cotton, it is thought, was derived from this species, but degenerated in the progress of tillage by intermixture with other kinds. To a cross with Sea-Island Cotton, large quantities of which were shipped to Louisiana immediately subsequent to its cession to the United States, is perhaps in part to be attributed the decided superiority of the New-Orleans Cotton wool of the present day over all others in North America of the green seed description.

From this brief notice of the quarters whence different Cottons were received in this country, in connection with the progress of the plant from beyond the Indus to the Levant, we have satisfactory reasons for concluding, that to the Mediterranean and Asia Minor we are mainly indebted for the particular species of the gossypium which has been the subject of investigation. Of the two kinds from which the green is derived, the Herbaceum is clearly of Eastern origin, and the Hirsutum also probably, though it is positively asserted to be a native of the West Indies.

Notwithstanding in the accounts current, published in the "Carolina Gazette" of 1792, the article of Cotton does not appear, yet, it is certain, that even at a much earlier date, it was vended in Charleston in small parcels, varying from one to thirty pounds. In 1787, it was brought from Orangeburg, Newberry, and, it is believed, Union, and sold in the seed to the merchants, at two pence per pound, who resold it principally to the ladies to make "patch-work bed-quilts." In that year, or the following, two or three bags, about 100 lbs. each, of seed Cotton, were packed in the store of Wadsworth & Turpin by Samuel Maverick* and Jeffrey, a half-blood Indian. These were shipped to England as a sample and an experiment. The answer of the consignees was discouraging. It is not worth producing, said they, as it cannot be separated from the seed. In 1794, Dr. James Otis Prentiss, and in the same or subsequent year, Col. William Thomson, of Revolutionary memory, each planted Cotton for market; the former in Orangeburg District, within a mile of the village, and the latter at Bellville, in St. Matthew's Parish. In 1796, cultivators of the crop appeared in several parts of the State; among them were Samuel Felder, of Orangeburg. It was first grown in the High Hills of Santee by John Mayrant and Asbury Sylvester, in 1798. The year afterwards, Gen. Wade Hampton introduced the plant into Richland District. With the energy and sagacity that distinguished him, he began his operations on an extensive scale, and from 600 acres he gathered over 600 bags. Although not the first person who employed Whitney's Cotton-gin* in South-Carolina, (for, in 1795, one was erected on Mill Creek, five miles below Monticello, Fairfield, by Capt. James Kincaid, and, three years afterwards, by several other planters,) still he was certainly the first who used water as the propelling power. His gins were furnished by an ingenious artist of Georgia, assisted by William Munson, of Richland. Though of rough construction, they served as models for others made in 1801, by William Munson and James Boatwright, of Columbia. These were the first of the new machines of home manufacture. It does not appear that Cotton was raised for market in Edgefield, and the more northern districts, until 1802, until which time tobacco was one of the staple commodities. In that year, Col. Z. S. Brooks erected a Cotton-gin on the North or Saluda side of the district. With this he prepared for sale the crops of his neighbors for the compass around him of ten miles.

Before concluding this branch of our inquiry, it becomes necessary to remove a difficulty that seemingly militates against what has been advanced in reference to the exportation of Cotton from South-Carolina. On the highest authority, it has been already stated that, from 1785 to 1790, a period of six years, there were shipped from Charleston 153 bags of Cotton; yet, from the representations just made, it seems that that commodity was not grown, as a crop, in this State until 1794. The solution is probably this: the Cotton was either prepared by hand-roller gins, which were undoubtedly in use even before the war, and sold in small quantities to the merchants, who packed it for exportation; or it was sent in the seed to Philadelphia and New-York, there to undergo the cleaning process.—The latter supposition is based on the large amount† of Cotton shipped from those ports in the years alluded to, and the fact, as will be seen hereafter, that machines to disconnect the seed from the wool were employed in Philadelphia, in 1784. Farther, the condemnation of the bags subsequently exported by Wadsworth & Turpin, shows that the previous consignments must have been of clean Cotton, and not in the seed as might be conjectured.

Sea-Island, or black seed Cotton, began to be raised in Georgia, in experimental quantities, in 1786. The native place of the seed is believed to be Persia. It is designated the Persian Cotton by Bryan Edwards,‡ and is so called in the West Indies and by the merchants of England. The seed grown in this country came from the Bahama Islands, where it had been introduced by the Board of Trade from Anguilla, a small Island in the Caribbean Sea, and was sent by Mr. Tatnall, then Surveyor-General of the Bahamas, Col. Kelsell, and others, to Governor

* Mr. Maverick states that he was the first person who made sugar in South-Carolina. About the year 1800, he planted some ribbon cane, purchased in the Havana, in his lot to the East of the present Orphan House. It yielded 300 lbs. The cane was pounded in a mortar, and the juice boiled in iron pots.

* "When Whitney's gin was exhibited in Georgia, none but women were permitted to enter the room. An ingenious young mechanic at length introduced himself into the apartment in women's apparel, and, by a minute examination of the machine, satisfied himself that he could not only imitate, but improve on its construction, by making it more efficient.—This discovery was communicated to my father by Gen. Gun, who spoke so confidently of the capacity of this individual, that my father was induced to visit him at his residence in Georgia. This visit resulted in a contract for three gins, applicable to a large scale of operations, and they were unquestionably the first ever driven by water-power."—[*Extract of a letter from Col. Wade Hampton to the writer.*

† See note B. in the Appendix.

‡ Edwards' West Indies, vol iv. p. 363

Tatnall, James Spalding, Richard Leake, and Alexander Bisset—all of Georgia. Its first cultivators in that State were Josiah Tatnall, Nicholas Turnbull, James Spalding, and Richard Leake. The first bag exported from Georgia was by Alexander Bisset, of St. Simon's Island, in the year 1788, or, in the opinion of some, by a Mr. Miller, who for that reason still bears the name of "Cotton Miller." The Bahama seed did not give fruit the first year, but from the mildness of the winter of 1786, seed was obtained from the rattoon, and the plant became acclimated.*

The black seed Cotton region of this State is bounded on the North and north-west by a line about 20 miles South of the line that separates Barnwell and Orangeburg from the neighboring parishes; on the north-east and East by the Santee river;† on the West and south-west by the Savannah river, and on the South and south-east by the Ocean. The Eutaw Springs, in St. John's Berkley, is the extreme northern point to which it extends. Williamsburg was, for many years, embraced in its limits; but that district no longer furnishes a supply of the raw material. About the year 1812, three or four planters, as an experiment, introduced its culture into the southern part of Sumter district. The quantity and quality of the crops were sufficiently encouraging, but, as the preparation of the wool was objectionable, the growers abandoned their enterprise for the reason of the large expenditure of labor and time that it required.—The first attempt in South-Carolina to raise a crop of long Cotton was made, in 1788, by Mrs. Kinsey Burden, of Burden's Island, St. Paul's Parish. As early as about the year 1779, this and the short staple Cottons were produced by her husband, whose negroes were then clad in homespun of home manufacture. Although Mrs. Burden's field, the larger portion of which was in corn, was manured with compost, the plants did not begin to bloom until September, and not a pod ripened. The cause of failure was subsequently traced to the seed, which was of the Bourbon kind.‡ The first successful crop appears to have been grown by William Elliot, deceased, on Hilton Head, near Beaufort, in 1790, with 5¼ bushels of seed, purchased in Charleston at the rate of 14*s.* per bushel.§ The Cotton brought 10½*d.* per pound. In 1791, John Screven, of St. Luke's Parish, planted 30 or 40 acres at his Montpelier plantation on May river. The product was packed in the article called *Hessians*, and sold, in Georgia, to Mr. Troup, Robert Bolton, and Mr. Miller, for 1*s.* 2*d.* to 1*s.* 6*d.* sterling per pound. In 1792, John Rose cultivated a small field on the Oakatee creek, from which he gathered 600 lbs. which commanded, in the Savannah market, 2*s.* a pound. It is certain that, at this period, many planters on the Sea-Islands, and contiguous main land, experimented with long Cotton, and, probably, it was produced by several of them for market. The season of 1793 found cultivators in other sections of the State engaged in the good work; among them James King of St. Paul's Parish, Col. Edward Barnwell and Capt. John Joyner of Port Royal, and Gen. William Moultrie of St. John's Berkley. The crop of Mr. King yielded abundantly, and was sold by Kinsey Burden, now of St. John's Colleton, at 12*d.* to 13*d.* the pound; that of the latter, at his Northampton plantation, covering a field of 150 acres, was a decided failure—the result of an unacquaintance with the proper mode of management, in connection, probably, with an unfavorable season. In attempting to raise so new a product on so large a scale, and thereby encountering the hazard of sacrificing the labor of a year, Gen. Moultrie gave a signal proof of his devotion to the true interests of South-Carolina. He had gallantly defended her in war; in peace he was still her ardent friend, diligently seeking opportunities to nourish and sustain her. But to return from this digression. The Cotton culture from this time progressed rapidly. In all the Parishes the practical friends to its extension greatly multiplied. Against each other this plant and indigo struggled for the ascendency. In 1798,* the latter had very generally ceased to be grown for market.

As an evidence of the former value of this species of the gossypium, and of the success of some of its growers, it is worthy of record that Peter Gaillard, of St. John's Berkley, in 1799, averaged 78 pounds sterling per hand. In that year, James Sinkler, of the same Parish, from a field of 300 acres, realized 216 lbs. per acre, for most of which he received 3*s.* a pound. William Brisbane, deceased, at his White Point plantation, St. Paul's Parish, was so successful in 1796, '97, and '98, that, from moderate circumstances, he became, in his judgment, so independent as no longer to engage in the toilsome task of cultivating the earth. He sold his landed estate to William Seabrook, of Edisto Island, at a price held by many to be ruinous to the latter,† and passed a few years in traveling in our Northern States and in Europe.‡

While the larger portion of the seed used in

* These interesting facts, except what is said of Mr. Miller, rest on the authority of Thomas Spalding, of Sapelo Island, Georgia:

"While lately at Savannah, Mr. Scott brought to see me a very respectable gentleman from the Bahamas, a merchant, but also the Speaker of their Colonial Assembly; who stated he had been applied to from Louisiana the last winter to procure five bushels of Cotton seed, and strange, what had been England's best Cotton colony a few years back, did not afford this small supply—the gentleman could not procure a seed; and what did the Negroes live upon, I asked? Upon Sago, made from the Conti plant, which was growing in the woods, and which they had been taught to prepare, no doubt, from some of the Indian Negroes from Florida—many of whom had taken shelter in the Bahamas. What a lesson upon English legislation for her colonies!"—[*Extract of a letter from Thomas Spalding, of Georgia, to the writer.*

† West of that line some green Cotton is also grown.

‡ All attempts to naturalize the Bourbon Cotton, though it strongly resembles the green seed species, have failed.

§ The original paper, "An account current between William Elliot and Jacob Deveaux," showing the purchase of the seed in 1789, was kindly put into the hands of the writer by William Elliot, Esq. of Beaufort. As Cotton seed was for sale in that year, other planters, it is probable, cultivated it as a crop in '90, but their names are unknown.

* At that early period, the opinion prevailed that the supply of Cotton would soon exceed the demand. A highly respectable planter of St. John's Colleton, deceased, in looking at his first crop, the produce of a few acres, after it had been housed, exclaimed—"Well, well, I am done with the cultivation of Cotton! Here is enough to make *stockings* for all the people in America."

† Mr. Seabrook, with the proceeds of the crops of the plantation, paid the purchase-money in two years.

‡ It is questionable whether the Sea-Island planter, for the last five years, has realized over 5 per cent. on his capital.

South Carolina was either purchased in Charleston or in Georgia, a considerable quantity was obtained in the Bahamas, through the active exertions of friends who resided in Providence.

In 1780, when England had no fine manufactories, the best Cottons brought to her market were from the Dutch plantations of Berbice, Demarara and Surinam. These then commanded respectively 2*s.* 1*d.*, 1*s.* 11*d.*, to 2*s.* 1*d.*, 2*s.** In 1786, Bourbon Cotton,† remarkable for fineness, but deficient in length, was worth from 7*s.* 6*d.* to 10*s.* per pound. It was superseded by Sea-Islands, which in '99 sold readily in Liverpool at 5*s.* to 5*s.* 3*d.*‡ per pound. Its price in this State, in the infancy of its production, was generally from 9*d.* to 1*s.* It soon rose to 1*s.* 4*d.* and 1*s.* 6*d.*—then to 2*s.* and upwards,§ at which it remained until 1806, when the planter for the first time experienced the baneful effect of restrictions on commerce. From the superiority of this Cotton to that raised in any other country, even from the same seed, the staple at first was objected to, as too long, and by one or two English spinners, it is said, it was actually cut shorter.*

* Edwards's West Indies, vol. iii. p. 92.

† Bourbon Cotton was first imported into Manchester in 1783.

‡ Smither's Liverpool, p. 157.

§ From 1798 to 1809, both inclusive, a distinguished planter of this State sold his Cotton in Charleston at the following prices:

	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
1798	1						
1799	1 4						
1800	2	2 1					
1801	2 1	2	1 8				
1802	2 3	2 1	2 4	2 7	2	1 8½	1 7½
1803	1 8½	1 9	1 8	1 7	1 6	2 6	
1804	1 6	2 6					
1805	2	1	1 9	1 6½			
1806	1 11	1 9	1 7				
1807	1 8	1 7	1	25c.	18c.	13c.	10c.
1808	30c.	25c.	23c.	15c.			
1809	26c.						

* Smither's Liverpool, p. 135.

[*To be continued in next number.*]

THE CENTRAL OR RED-LAND DISTRICT OF VIRGINIA.

ITS SOIL AND ADVANTAGES DESCRIBED.

We might vouch, if voucher were needed, for the accuracy of the following sketch from the pen of Hon. W. L. Goggin, who so well and faithfully represented that District in the last Congress.

The field, however, for eligible investment, for men who have small capital in money, but a better sort of capital in skill, and industry, and economy, is not confined to any particular District of the Old Dominion. We verily believe that the world does not afford a more inviting field for the exercise of these manly virtues, than does that entire and vast region, whose head springs find their way through a thousand creeks and rivers into the Chesapeake Bay

Where are such sheep-walks, such inexhaustible beds of lime, of coal, and of iron to be found, as in the mountains of Maryland and Virginia? And then descending to tide water, where such long and deep rivers, such growth of wood and timber, such beds of marl and of oysters? Much as is thought and said of the profit of capital employed in manufactures, it is nothing compared with what might be realized by a company with *large* capital skillfully engaged and directed, in the purchase of wood and timber lands, with their marl-beds and oyster-flats, on the tide-water counties of both those States. Half a million of New-England working-men would rapidly grow rich on their waste lands and unused resources.

There are hundreds of fine estates that might be bought, a great part of the purchase money on time, the wood and timber of which would pay for them three times over, with adequate capital, managed with tolerable discretion, in preparing and sending them to the markets of Baltimore, Philadelphia, New-York and Boston; all of which are easily and cheaply accessible.

Washington City, Jan. 20, 1845.

J. S. Skinner, Esq.

Your former connexion with the American Farmer had made your name familiar to most of us of Virginia, and we are pleased to find you again wielding your pen in another quarter. The allusions you make to the soil, the resources and the natural advantages of the Old Dominion, are as just as they are well-timed. I trust that many of your New-York readers may be led to look for themselves into the truth of what you have said. Let them come among us, of all parts of that Old Commonwealth, as they have already done into the neighboring county of Fairfax, and we promise to show them an abundance of the finest lands, which may be bought at reduced prices,—a country than which none can be more beautiful, more healthful, with better advantages of water-power for transportation or machinery, with a soil originally more productive or susceptible of a higher state of improvement. As you are desirous "to collect all practicable information concerning the condition and price of lands, in the regions men-

tioned, and all other information which the friends of improvement may choose to communicate for the purpose of extending a knowledge of the advantages presented for settlers, as to the number, extent, soil, condition, price and products of estates for sale, including the names of the owners or occupants, with particulars concerning the proximity to water courses and mineral manures—the advantages for sheep husbandry, and grazing generally, as well as for grain growing," &c.—I have hastily made a few reflections which I give you, as respects my District, which is commonly known as the *Central or Red Land District of Virginia*—embracing the counties of Bedford, Amherst, Nelson, Albemarle, Orange, Madison and Greene.

BEDFORD, the county in which I reside, is bounded on the south side by the *Staunton River*, a branch of the Roanoke, on the north by the *James River*, while its western extremity, the whole length, reaches the top of the *Blue Ridge* adjoining the rich valley counties of Roanoke and Botetourt. It is accessible by water communication on both sides, and has many advantages for transportation, which are not surpassed by those of any midland county in the State. The *James River and Kanawha Canal* will pass, when completed, through its entire northern border, and it is now completed to the town of *Lynchburg*, very near the Bedford line, thus opening a speedy communication with the tide-water at Richmond, 150 miles below. Lynchburg is a rich, flourishing town, with a population of some six or eight thousand and is the market for the entire county of Bedford. It has some 50 or 60 stores, a *Cotton Factory*, fine *Flour Mills*, a number of *Tobacco Factories*, *Iron Foundry*, &c., with many other manufactories, and immense water power which is supplied from the *canal* and *water-works*.

The *Peaks of Otter* are situated in this county, (Bedford,) on the North-west corner—they are not only beautiful themselves, when seen as they are in the distance, but the whole range of the *Blue Ridge*, presents, perhaps here, the most interesting view of the kind in the State. These mountains afford an unlimited range for stock, and the advantages for *sheep walks*, (mild as is the climate, combined with the productiveness of the soil,) that are nowhere equaled, as is believed, except by similar situations in the neighboring counties. The county seat is the village of Liberty, in full view of the mountains, at some 12 miles distance; it has a population of from five to seven hundred, and is located on the great western road from the lower James River country to Nashville, Knoxville, and all the South-west. The Lynchburg and Salem Turnpike passes through it. It is a neat and thrifty village, with a fine Court-house, four churches: Baptist, Methodist, Presbyterian, and Episcopalian; it has also an Academy for young ladies, now under the charge of most experienced and popular teachers.

The soil of the county generally is of the rich red and chocolate-colored clays. No land can be better adapted to the growth of clover, and all the grasses, which are produced in the greatest perfection, aided as they are by *Gypsum*, which is procured at Lynchburg, the market near us, at a comparatively trifling cost, by *Lime*, which can be had in abundance within a few miles, at various places in the county, and by animal and artificial manures, which are easily produced. This county now is in a rapid state of improvement and in a few years will become to be second to none in the State in point of actual fertility. Less tobacco is now produced than formerly, and as this crop has been gradually given up systematic farming is advancing. The grain crops produced are corn, oats, wheat and rye; potatoes, beets, turnips, peas, &c. are also produced in the greatest perfection, with but little labor. Fifty bushels of corn and thirty bushels of wheat are often gathered, on the best improved farms, and any of the good lands can be made to produce 100 bushels of corn to the acre. The prices of lands vary according to locality from $3 to $25 per acre; hundreds of acres may be had of most excellent quality at from $5 to $12. Where it lies near the turnpike, or in the vicinity of the village, more will be asked. Ranges for sheep may be had at very reduced prices on the mountains, and where, too, could be produced all the grasses in which they delight, such as the red and white clover, the meadow fox-tail, short blue meadow grass, lucerne, rye grass, &c. These advantages, and then the beautiful clear streams which abound in all the mountain regions, invite a pastoral life, and the shepherds with their flocks are only wanting to fill out the picture in Dyer's Fleece.

> "First, however,
> Drive to the double fold upon the brim
> Of a clear river, gently drive the flock,
> And plunge them, one by one, into the flood.
> Plunged in the flood not long the struggler sinks
> With his white flakes that glisten through the tide;
> The sturdy rustic in the middle wave
> Awaits to seize him rising; one arm bears
> His lifted head above the limpid stream,
> While the full clammy fleece the other laves
> Around, laborious with repeated toil;
> And then resigns him to the sunny bank,
> Where bleating loud he shakes his dripping locks."

What is said of the soil of Bedford may apply to almost the entire district, all the counties of which lie stretching in a line, from the base to the summit of the *Blue Ridge*, except the county of Orange, which is intercepted by the county of Greene, of which it once formed a part. AMHERST is immediately North-east of Bedford, on the James River, and has all the

advantages of its navigation as well as the market of Lynchburg. Its soil, as well as that of NELSON county, still to the eastward, is admirably adapted to the growth of all the crops I have named. Both of these counties have immense natural water-power facilities. Their mountain streams, if properly applied, would be sufficient to propel the machinery of the whole Union. The ranges for stock here, too, are extensive, and the beautiful rich mountain sides interspersed with farm-houses, some of them even elegant mansions, betoken an independence among the inhabitants that is often found in such situations. Many of the mountains to their very summits are covered with the richest verdure, not "*eternal snows*," like those of *Oregon*, as described by travelers. The James River Canal affords an outlet for the products of these counties as well as those of the county of *Albemarle*, which has also the advantage of the navigation of the *Rivanna River*. Boats ascend this river above the town of Charlottesville, near which is *Monticello*, the seat of Mr. Jefferson, as well as the *University* of the State. Charlottesville is a place of considerable size, with the finest society, and the highly cultivated lands in its neighborhood remind many Virginians more of a number of large, rich gardens, than the farms to which they are accustomed. Agriculture here has been long pursued systematically, and I believe this county can boast of one of the very oldest Agricultural Societies in the State. Some of its more distinguished sons are still the friends of the Society, and, among others, Dr. FRANK CARR, Hon. WM. C. RIVES and THOS. J. RANDOLPH, Esq. deserve to be remembered by the patrons of Agriculture, for their efficiency and zeal. Lands in this county rate higher generally than in some of the other counties, and it has facilities in the way of roads, rivers, colleges, &c. that no counties East or West of the mountains can lay claim to. There are in the county two Cotton Factories, employing a number of hands.

The county of ORANGE, the residence of the late Governor BARBOUR, and of his brother the Judge, lies on the waters of the *Rappahannock*. Its market is Fredericksburg and Richmond. The court-house is not far distant from Gordonsville, at which point the *Louisa Railroad* terminates, and which intersects with the Richmond, Fredericksburg and Potomac Railroad. The land of this county is very productive in all the crops that are grown successfully in Eastern Virginia. Lying, as it does, off the spurrs of the mountains, and gently undulating, it is tilled with less labor than many of our high lands. Near as it is to the town of Fredericksburg, it has all the advantages of a tide-water country, while it is remarkably free from diseases.

The counties of MADISON and GREENE, adjoining those of Rockingham and Page on the West side of the Blue Ridge, in the Valley, abound in lands resembling those of the other counties already named. Many of the farms are in the highest state of improvement, and those upon the *Robinson* and *Rapid Ann* rivers, and the smaller streams, are not surpassed by the best farms of the other counties. Wheat, corn, oats, tobacco, and other crops, are cultivated most successfully. Here, too, are abundant ranges, and the wonder is that sheep-husbandry is not introduced. These counties are watered by streams which flow into the Rappahannock and supply the water-power for numerous flouring-mills on an extensive scale.—The town of Fredericksburg, on this river, is distant some 50 miles, up to which the river is navigable for steamboats, and where, also, the Richmond, Fredericksburg and Potomac Railroad crosses, terminating in a northerly direction, on the Potomac River. The facilities for travel, North or South, as well as for the transportation of produce, are, therefore, very great. Good lands in all the counties named are abundant and cheap; they hold out inducements to settlers and promise advantages that, in many respects, are unequaled.

I might give you particulars in regard to many farms within my knowledge, but time will not allow me to do so. There are many that may be purchased on such terms as cannot fail to suit those inclined to make such investments. In the county of Bedford, in the neighborhood in which I reside, there is one containing 7 or 800 acres, that may be purchased on a credit (and it may be divided into some three, four, or more farms) of one, two and three years, the purchase money being well secured, at $10 per acre. It is well watered on one entire side by a stream perhaps three times as large as the Tyber in this city. There are many of the finest springs in various parts of the land, and it is intersected by numerous small streams, called, in Eastern Virginia, branches.

I have thus endeavored to give you an outline of some of the features of our country; but, hastily written as it is, it is very imperfect. I trust your efforts to call public attention to the lands of Virginia will not be without a good effect.—Every portion of the Old Commonwealth is deserving of the efforts which a few are making to place her in the scale she is entitled, by her position and her advantages, to occupy.

I am, very respectfully,
W. L. GOGGIN.

GUANO.—This is said, in the "Florists' Journal," to have killed all the plants in pots to which it was applied dry, mixed with the soil at the time of potting. But, would it have injured them had it been made into a compost three months before the time of potting, and exposed to the weather all the time?

[*London Gardeners' Chronicle.*

A MISCELLANEOUS CHAPTER.

SOILING—VARIOUS OPINIONS....STRAWBERRY....A NEW VEGETABLE....LIQUID MANURE.

We are aware that there is much question about the expediency of attempting to *soil* domestic animals in this country. The question is one about which, as Sir Roger de Coverly says, much may be said on both sides. What, it is maintained, renders it unprofitable in most cases, is the *dearness of labor*. In the one case, the food is to be provided by laborious and expensive cultivation, and then to be cut daily and transported to the barn-yard or stable. This is what constitutes the objection to soiling, as compared with the usual system, under which the same animals depend on natural pasturage, and are themselves the machines for collecting the food, and turning it into milk, or butter, or meat; or, if work-animals, they to are thus supported during their season of labor.

Mr. Gowen, widely known as a zealous merchant agriculturist, of Philadelphia, has practised extensively on the soiling system, as the means of accumulating great masses of manure, by which his farm has been brought into a state of great productiveness from one of great sterility: but there would seem to be, in his statements, a want of exactness and minute detail, under the heads of *Creditor* and *Debtor*, with which, in his character as an eminent merchant, we have no doubt he is perfectly familiar, and of which he is rigidly observant. This apparent want of arithmetical particularity, as to outlay and income, leaves an opening for suspicion and cavil on the part of those who are ever ready to pick a hole in the statement of results achieved by full-handed merchants, when they betake themselves, for profit or amusement, to practical Agriculture. Such Doctor Doubtys will not, for instance, be slow to surmise that in healing over the galded spots upon his farm, as he found it, and causing them to put forth heavy crops, he probably walked over his fields, with the wand of Midas in his hand, waving it here and there, and scattering gold dust, where the poor Farmer has to spread any thing he can scrape together, and water it with the sweat of his brow. Hence the necessity of being very particular in stating such accounts. The accounts of English agricultural experiments are generally exemplary in this respect.

As to soiling, we remember to have heard read before the Farmers' Club, a letter from John Travers, Esq., a gentleman of singular quickness of parts, and remarkable for power and habits of analysis, in which he maintained that soiling, in this country, even under favorable circumstances, involved expenses that no ordinary results would remunerate. As we before said, much may be said on both sides; and the advantages of soiling are, in most cases, so decided, especially in its instrumentality in augmenting the *Bank of Manure*—the indispensable Bank for the Farmer—that we shall at all times feel bound to suggest whatever may have a tendency to remove the difficulties that stand in the way of its more extended practice. One of these difficulties consists in finding suitable grasses and other green crops, adapted to keeping up an abundant, cheap and unbroken supply of the different kinds of food, suitable for animals to be housed or yarded throughout the year. Grasses are to be preferred to roots because their cultivation and gathering requires so much less labor; but then they can only be availed of from early Spring until, at the farthest, the early frosts of Autumn. As to the *grasses*, we have been accustomed to think that in our country, we have relied too exclusively on *red clover*—and restriction almost exclusively to that, results, we verily believe, from the greater ease with which it may be secured, and from that disreputable indolence (the force of habit and defective education) which prevents farmers from *thinking*, and from breaking away from old prejudices. We have repeatedly suggested a fair trial of *lucerne*, and of our ordinary rye; and in the last number of the Farmers' Library, we called attention to a new species of rye, much extolled in England lately for soiling purposes, called there the *St. John's-day Rye*. It will occur to every reader that things may possess great comparative value in England, and thus become subjects of high praise and commendation in English papers because they have nothing better; and yet these same crops lose in this country, by comparison with others which are of more value, but which are unknown in England. The turnip, for instance, which may be said to lie at the bottom of British husbandry, sustaining indirectly her population and her government, is of far less importance in America, both positively and comparatively;—positively, because of climatic difficulties in the growth of it here, especially North of the Connecticut—and comparatively, because in that sense it comes in competition with Indian corn, the glory of American Agriculture and the staff of Ameri-

can subsistence. It is some obvious and acknowledged differences of climate and staples like this, which prompt many people to raise up their lazy voices against all English agricultural writings, and the trial of all new things introduced in English Agriculture and Horticulture, and against English animals and implements. This stereotype cry of *difference of climate* is, we hear too often, the convenient refuge of ignorance and indolence. Listen to it, and we should become stationary as the Chinese. On the contrary, we should keep our eye constantly on what the science and the wealth of Europe is doing in the melioration of fruits, the variegation of flowers, the improvements of machinery, and in all the useful and ornamental inventions. How, but by an honorable spirit of inquiry and emulation, has Mr. WILDER, the enlightened President of the Horticultural Society of Boston, been enabled to exhibit several hundred varieties of pears, and flowers of Continental origin, in anticipation even of the London florists, and inconceivably beautiful? But to return to our subject. Conceiving it to be our duty to look out for whatever may be noticed abroad as new and valuable, we have selected three items from a single paper—a late London "Gardener's Chronicle"—to wit, *Italian Rye Grass*, for soling; a *Strawberry*, which appears to excel in size even our own Hovey; and a *New Vegetable*.

As to the Italian Rye Grass, we are aware that it has been introduced, and that it *may* not possess the value ascribed to it, as in competition with Lucerne or Indian Corn, sowed for soiling; but surely an account thus plausibly representing one acre to yield $150 worth of grass, is at least *worth* reading, and the grass worthy of careful trial. The suggestion of using *liquid manure* will doubtless alarm the timid and horrify the lazy farmer; but boggle at it as he may, he *will have to come to it at last!* He must be blind, or worse, whom we shall not, sooner or later, cause to see, in the pages of this journal, how indispensable it is to adopt the means of saving and using the *liquid manure on his farm*. Yes! the day shall come, when any man who pretends to keep pace with the march of agricultural improvement, shall be put in Coventry by any Agricultural surveying committee, who is found to neglect and throw away that most valuable portion of his resources. That subject, we promise, shall be demonstrated, in a manner, by argument and illustration, to make every farmer feel that to wilfully lose the *liquid* excrements of his farm, is precisely as improvident as it would be to leave his meat-house open, or his wheat unshocked in the field after being cut. All in good time, my friends. For improvidence, for waste, for ill-success, and for ruin, you may plead anything else; but—*you shall not plead ignorance if you will only read!*

On the subject of soiling, once more, we need hardly suggest that every man must practice it on some scale, or ought to do it. He ought to have green food for his plow-horses at night, and, at least, for his milch cows. For this purpose a lot, smaller or larger, according to the number of animals, will suffice; but even for that there is a good and bad manner of preparing the ground, as there is a choice of crops, for the purpose. For the introduction and trial of new kinds of grains, grasses, fruits and animals, the agriculturist depends chiefly on the merchant farmer, or some other not regularly bred to the pursuit; and is it not too apt to be the case that, if his trial fail, he is sneered at by "the practical man"—and if he succeed, after some years, the public profits by his enterprise, while he gets neither thanks nor remembrance? Who remembers Governor Randolph, the scholar, as the inventor of the hill-side Plow? or Commodore Stewart, as the first to send Guano to America twenty years ago?

P. S. Since the above was written, we have had an opportunity to observe that in New-England the practice of sowing corn broad-cast, for soiling, is extending, and seems to answer admirably. To save labor, the lots appropriated to this object should be near the spot where the food is to be consumed.

LOLIUM ITALICUM—*(Italian Rye Grass.)*—Much, and deservedly, as this Grass is esteemed where it has been cultivated, it may, perhaps, prove useful to some of your agricultural friends, and induce many who have *not* yet tried it to take an early opportunity of doing so, if you will publish a statement of the advantages I have derived and expect from its growth on a small scale under the following circumstances:

In September last, upon an acre of good loam, previously well drained and deep plowed, I sowed four bushels of seed. It vegetated quickly, and grew so fast that, considering it too thick to stand over the winter without injury from snow, I depastured it with sheep before Christmas. In February it was splendid keep for ewes and lambs; but having so little of it, as fast as the latter were dropped they were, with the ewes, turned upon it, each for a few days only, to give them a start before passing them on to the other keep, and in this way it was fed down close by a small flock of ewes with their couples. The liquid manure-cart then conveyed upon it a good dressing from the urine tank of the cow-sheds and stable. In April it was mown and consumed in the stalls day by day as long as it lasted, the liquid manure-cart being freely used, as fast as a sufficient breadth was cut for it to work upon, and I firmly believe I had considerably more than two tons to the acre. In the last week of June and the first of July, a second and equally good crop was cut

and consumed as before, followed in the same way by a dressing of liquid manure.

It is at this moment looking very luxuriant, but having no farther occasion for it in my stalls, I purpose cutting it the next time for its seed, and confidently expect to be enabled to do so by the end of August, and (from a little experience I have had this week upon another and very inferior piece of land) doubt not of obtaining at least forty bushels of seed, (now worth, I believe, 9*s*. or 10*s*. a bushel;) after which I shall give it another taste of liquid manure, and confidently look forward to a good bite, if not another cutting, by the end of October or beginning of November, thus obtaining, in all probability, something very like five crops within the twelve months, four of which may fairly be regarded as full crops. Those already had could, I think, hardly be surpassed for luxuriance.

The several applications of liquid manure were with ease pumped by a stout lad, and with one horse conveyed to the ground, and applied through a trough placed behind the carriage, each time in little more than half an hour; and I will venture to say that where, as in the present instance, land is near the steading, an acre may be dressed well with ease in less than four hours.

Four bushels of seed I am aware is more than usually sown, but the result has proved that under such severe cropping it was not too much; for the plant on the ground is, I consider, perceptibly thinner; but I have no doubt of amply replenishing this at the next cutting by the quantity of seed that will unavoidably be shed in harvesting it. After this I intend to harrow slightly, and manure the whole at one time with urine as before. If one were justified in entering into a calculation of the value of the obtained and expected crops, I consider it may fairly be set down thus:—

Dr.	£	*s.*	*d.*	Cr.	£	*s.*	*d.*
Plowing twice, 1 acre	1	0	0	Value of feed at Christmas, 1844.	1	0	0
4 bushels of seed, at 9*s*	1	16	0	First cutting, call it 2 tons of fodder, green, or 1½ as hay, at only £4 a ton, (worth this year £6)	6	0	0
Sowing and harrowing	0	4	0	Ditto, second cutting	6	0	0
4 dressings of liquid manure, too often regarded as of no value—say	1	0	0	Third cutting, say only 40 bushels of seed, at 9*s*.	18	0	0
Cutting twice for forage	0	5	0	1½ ton (deducting weight of seed,) of fodder	5	0	0
Once for seed	0	2	6	Value of bite in October or November,* say	1	0	0
Threshing, riddling, &c	0	10	0				
Rent, tithe, taxes, &c	3	0	0				
Total	7	17	6	Total	37	0	0
					7	17	6
				Profit per acre	29	2	6

The above happened to be the more convenient method for my purpose, and therefore was pursued; but I conceive it is by no means the most profitable, inasmuch as in an ordinary season, with liberal assistance, an early feed may be obtained in spring; two cuttings for seed during the summer months, and mown or depastured in autumn, thus increasing its value from £8 to £10 per acre.

It may possibly be said, "Oh, but four manurings in twelve months is a deuce of a dressing." One moment's dispassionate reflection will, however, show that all these were easily and inexpensively obtained, that they were derived from a source by two many farmers thrown away as valueless, that they can be applied at less than a fourth of the value and expense of one ordinary application of solid dung, and with equal, if not better effect; if it were possible to prevail on them to save their liquid manure with the same degree of care they often bestow on trifles about a farm, in themselves of much less value, and instead of allowing it to pollute their own or neighbors' ponds, which is rendered the more inexcusable when a liquid manure pit may in all, or most situations, be made for less than 30*s*.

I am very sorry to say that I know an instance, between five and six miles only Northwest of the "faithful city," where lamentable pains and expense appear to have been taken by an otherwise exemplary farmer (or his landlord) to get rid of this valuable auxiliary, by turning it into a wide ditch close by the turnpike road side, deep enough to smother at least a hundred of her Majesty's honest peasantry at once; aye, and where, too, sundry statutable permissions (I will not say encouragements) "to be drunk on the premises" abound, so that but for the grim visage of that feudal ornament, a pair of stocks, and the good example and care of the rural authorities, there would be more or less danger of such an untoward event taking place. [T. F., Ham-hill, near Worcester.

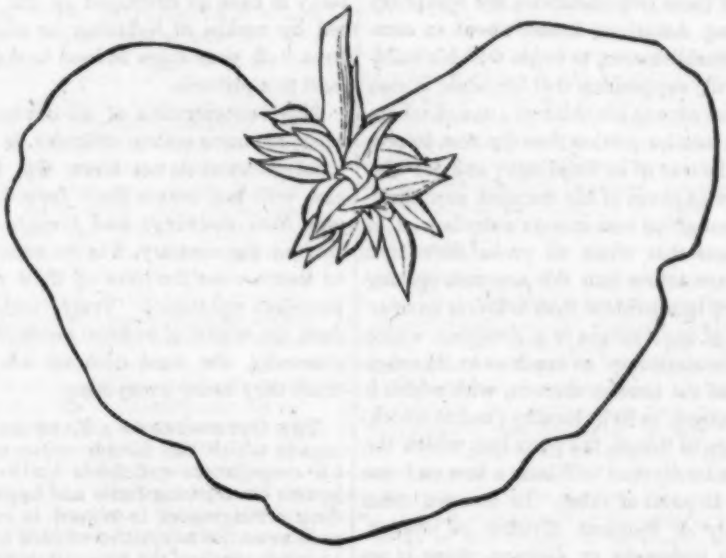
NEW VEGETABLE.—In the "*Monthly Magazine*," for September, 1821, James Sibbald, of Paisley, writes as follows, of a new vegetable which, if it could be obtained now, would, I think, be a great acquisition:—"The Trottel or Treuttel root is the principal source of subsistence to the Squee Indians, Labrador, withstands the most severe frosts, and it bears, even in the depth of winter, curled, thick, crisp leaves, as tender as Asparagus, and something like Seakale. The root weighs generally from 8 to 10 oz., and is shaped something like a Windsor Bean, grows in clusters like Potatoes, when boiled, yellow-colored, and though drier, much resembles the Carrot. I plant the roots, cut in small pieces, in rows two feet asunder, and three inches deep, in August or September, and as the plant is of rapid growth, begin to top the herbage in winter, (December and January,) and in the spring months, when vegetables are rare, I dig up a plentiful crop (10 or 12 of each plant) of a delicate vegetable—most nutritious, and keeps well. It is now grown at Greenock, Paisley, and Bristol." T. W.

[What is this?]

HORTICULTURE.—It may be interesting to the growers of Strawberries, to know what can be done with the British Queen, the remarkable specimens of which have, this year, excited so much attention about London. We, there-

* Worth considerably more if it should grow to cut for the stalls.

fore, give a prominent station to the accompanying sketch of a fruit of this kind, forwarded by Mr. JOHN STOBBS, gardener at Doddington Hall, near Lincoln. The figure shows its exact size, and it weighed a little more than an ounce and a half; so that ten such Strawberries would make a pound. Has any one ever produced such a Strawberry as this before? We doubt it.



ON THE PRINCIPLES TO BE OBSERVED IN THE ERECTION AND CONSTRUCTION OF FARM-HOUSES.

ON some future occasion, we shall give ground-plans of Farm Buildings, suited to farms of different sizes and to the husbandry of different States. The buildings adapted to grain-growing Pennsylvania, to hay-growing Massachusetts, to sheep-growing Vermont, to tobacco-planting Maryland, to cotton-planting Carolina, and to sugar-planting Louisiana, obviously require to be on plans widely different, as far as the staple crops are concerned; but in the following observations on Farm Buildings, from a late number of the *London Agricultural Gazette*, there are principles laid down which are of general applicability, deserving to be heeded accordingly. But, alas! as was lately observed on the subject in the New-York *Albion*, in our country of change! change! change! there is so little of forecast, or permanence, that few things are done with reference to any entire plan, in which one part is to relate to another, and each to all the rest; with a view to a combination of conveniences, and the most economcial use of the whole. The fact is, that farming is, for the most part, undertaken without adequate capital. Men buy and settle upon *land*, without having in hand the requisite means to improve it; whereas, in England, no landlord will rent land to a tenant, who cannot first show that he has beforehand, more *money per acre* than the *average fee simple* value of all the land in any State South or West of the Chesapeake and the Alleghanies; moreover, as few know how long their land may remain in their own families, or how long it may be before they are either starved out, or tempted by delusive descriptions and the increase of their household, to sell out and "*move West*," improvements are made in detachments, without confidence of remaining to carry out any plans, even if they had the forecast to form one, and means to complete it.

An ill-contrived edifice is put up in one place, and another in its uses closely allied to it is, after some years, put up at a magnificent distance therefrom; so that much time is daily wasted in passing from the "great house" to the "Quarters"—from the "Quarters" to each other—from all of them to the cattle-yard, and from that to the stable; from the stable to the corn-house, and from that again to the granary; the tobacco-houses being as widely scattered as the premises will allow; few or none of them closely watched, and kept carefully clean and in good order: *constantly*, as they should be, the preservation of buildings making, most emphatically, one of those cases in which "*a stitch in time saves nine.*" Let not these remarks be

deemed uncharitable or querulous. Much should we be rejoiced if we could give a reverse coloring to the picture; but *fiat justitia ruat cælum*—we must speak the truth at all hazards.

Under all these circumstances, we would say to the young American farmer about to commence an establishment, to begin with his buildings under the supposition that his estate is soon to be divided among his children; one of whom is to have a smaller portion than the rest, in proportion to the cost of its buildings; and let him regulate the expense of his mansion accordingly. Without going into minute calculations, is it not obvious that when all probabilities and casualties are taken into the account, nothing can be more improvident than to invest an overproportion of one's means in a *dwelling*, which must remain stationary, as much as to its original cost, and the interest thereon, with which it is to be charged, as in its locality; and to which, in the nature of things, the parts into which the estate must be divided will bear a less and less proportion in point of value. In a word from the certainty of frequent division of estates, equally by testament or descent, there is no country in the world where prudence so loudly enjoins great moderation of investment, in a mere residence, as in this; nor, when properly considered, does a costly one comport any more with good taste than with prudence. What farmer need desire to have a handsomer or better house to live in than Mr. Latrobe's neat cottage, *Fairy-Knowe*, of which the traveler gets a glimpse from the Thomas Viaduct, on the Baltimore and Ohio Railroad, at Elkridge landing? and that cost, we believe, about $1200. It was, however, far from our purpose, to have descanted on the proper plan or the scale of *Farmers' Residences*—so we return to *Farm Buildings*. Whether the young farmer's means be adequate or restricted, he should build, much or little, according to some *well-considered plan of arrangement*. If only one edifice can be built this year, let it occupy, according to his plan, a certain relation to those which are to be constructed when time and means allow it; and let him always bear in mind, that however humble the purposes for which the building is designed, there will yet be room for the exercise and display of taste and ornament, as well as convenience. There is opportunity for this even in a pigeon or a poultry-house; and since it costs only the trouble of putting them in the ground, let *trees* to be planted for embellishment, shade, and shelter. These are precautions that demand no considerable enlargement of means, or at increased expenditure, and therefore to omit them should be placed to the account of sheer indolence and want of sensibility, that indicate defect both of education and refinement.

To the *concentration* of the *farm buildings*, recommended in the following extract from the English paper, and by obvious economical considerations, there is the strong objection of liability to have all destroyed by fire, communicated by means of lightning or otherwise. To trust "all your eggs in one basket" is imprudent to a proverb.

This concentration of all out-buildings presents the more serious difficulty, in our country, where farmers do not know that they can, or else will not *insure their farm-buildings, or even their dwellings and furniture*. In England, on the contrary, it is the common practice to insure even the lives of their cattle against prevalent epidemics. Truly, with all our wisdom, the wisest of us have much to learn; and, generally, the most ignorant are those who think they know everything.

THE OUTHOUSES OF A FARM are those buildings in which the farmer stores and prepares his crops, rears and feeds his live stock, and houses his working cattle and implements. On their arrangement in regard to each other, as well as on the adaptation of each to its separate purpose, much of the farmer's profit necessarily depends. It is to the first of these considerations, the disposition of the several parts in relation to each other, that we shall now direct our attention.

The leading object to be aimed at in the arrangement of the outhouses of a farm is economy of time and labor in the performance of those operations which are to take place within them. The first principle by which we must be guided in an endeavor to effect this object is, the self-evident one, that there must be an immediate connection between those buildings in a homestead whose usefulness depends upon each other. In carrying out this principle, we shall find that the position of the barn governs, in a great degree, that of the other buildings; for the straw-barn being the great storehouse of forage and litter, from which the stables, feeding-houses and sheds and yards receive their supply, it is necessary that these be situated as near to it as possible, and those nearest to which the greatest and most frequent supplies have to be conveyed. Again, the straw-house is an appendage to the barn where the corn is threshed—there is a necessary connection here also. To the corn-barn, also, must be attached the building which contains the motive power to drive its machinery; and it is a convenient arrangement to have the granary, too, in immediate connection with the corn and dressing-barns.—Farther, the house where food is consumed should be in connection with, or at least not far removed from, the house in which it is prepared, and this again should be contiguous to the places where the food is stored. Lastly, that the cleaning out of the houses may not consume unnecessary time, the place where the manure is deposited should be near to them, and of ready access.

It should always be borne in mind that it is more important to save time in comparatively insignificant operations, if they be of frequent occurrence, than in large matters which are not often repeated. Thus, if the separation require to be made, it is better to have the house where

food is prepared, and whence small quantities are taken several times each day, close to the place where food is consumed, than to have it near the storehouse, from which the supply requires to be carried only once.

The second principle of arrangement which should guide us, although subordinate, is yet of great importance; it is to classify and arrange together the buildings used for like purposes.—An attention to this greatly facilitates the labors of the homestead. Thus, the houses and yards for particular descriptions of stock should be placed together; the working cattle should be kept by themselves; the cows of the domestic dairy should be kept apart from the feeding-stock; the pigs and the poultry should have their proper locality. It is of great assistance to this classified arrangement to have a working-court or yard, round which are assembled, in their proper places, the apartments for storing and preparing food, the sheds where the wheel-carriages of the farm are stored, the houses where the tools and smaller implements are kept, those in which the blacksmith and the carpenter work, and the others used occasionally for various purposes. And, in addition to this, it is important to place the highest buildings so as to afford shelter from the prevailing winds, and yet not to intercept the rays of the sun from the other buildings and the yards. In many situations it is desirable that the whole of the out-houses should be so arranged as to have one common entrance, which can be closed for security every night. This is especially necessary near towns.

It may be proper to remark that all the roads should be wide enough to allow a cart and horse to be turned on them; and that it is well that the yards should be so arranged as to allow of a cart being driven through them, which is much better than backing the horse.

So far, then, for the principles of arrangement of the buildings relative to each other. The next topic which demands our attention is the form which the collected buildings should assume, and this involves the consideration of aspect.

Under the idea of compactness, out-houses used generally to be arranged in the form of a square, with a central yard into which the litter was thrown; and here, uncheered by a ray of sunshine, wading in a pool of rain-water from the roofs of the buildings, and of liquid manure from the houses, the farming stock was suffered to languish. Professor Low, of Edinburgh, first showed the absurdity of this system, and pointed out the advantages to be derived by the stock from the admission of sunshine and air to their yards. He showed that these benefits could be best obtained by the form which also ensured other advantages—a long parallelogram. The Professor's principles of arrangement have been extensively adopted in modern homesteads, and have been advocated in almost every publication on Agricultural matters, although very seldom with the acknowledgment of the source whence they were derived.

The best form that the farm outhouses can assume—that which combines the greatest advantages—is a long parallelogram, with its diagonal nearly on a line from North to South. The prevailing and severest winds being from the West and West by North, the greatest possible amount of sunshine, and the best shelter may be obtained by having the sheds for the cattle and their yards open to the South and East. There are cases, however, in which this rule will not obtain, and these must be dealt with according to circumstances.

The buildings should be placed, if possible, on a gentle rising surface. If, where water-power exists, such a situation can be found, it is well to take advantage of it. But if to secure such power it is necessary to place the buildings where light, warmth, ventilation and drainage cannot be obtained in perfection, then the water-power ought to be sacrificed to these more important benefits. The position of the homestead is often determined by existing roads and divisions of the farm, irrespective of the eligibility of the situation in itself. This is an absurd practice, and cannot be too severely reprehended.

Among other matters demanding our attention in this preliminary notice, are the means for preserving the liquid manure made in the steading. The attainment of this important point is greatly assisted by the classification of the buildings before spoken of. Underground drains should be carried from the cow-houses, feeding-houses, and pig-sties, to one or more tanks. The tanks may be of two kinds; they may be adapted for making compost, in which case they should be in the form of a rectangular basin sloping inwards from the ends to its deepest point in the centre of its length, so that a cart may be driven through when the compost is carried out; and this, or something similar to it, is probably the most economical mode of using the liquid manure on a farm. Or the tanks may be in the form of a well, square, rectangular, or circular in the horizontal section, and arched or domed over. In this case the tank is used to contain the manure in its liquid state, and should, by puddling and the use of cement, be made perfectly water-tight. It must have a man-hole in the arch or dome, and another opening by which a pump may be inserted, or in which it may be permanently fixed. The drains, before entering this latter kind of tank, should terminate in a cesspool in which the liquid manure may deposit any sedimentary matter which would obstruct the working of the pump if deposited in the tank.

The eaves of all the buildings should be furnished with gutters, and the rain-water collected by them conveyed to underground drains by cast-iron pipes. The drainage of the site has already been spoken of as an essential requisite. It should be thoroughly done. In too many instances remedies are applied to the foundations of buildings, to prevent dampness from ascending, while the only true remedy is, by draining thoroughly, to remove the cause.—As drains very often harbor vermin, cesspools should be constructed in them, at proper places, without the buildings, which will effectually bar their progress.

On reviewing the principles here recommended to be observed in the collocation of the out-houses of a farm, it will be seen that their application in practice must be attended with no little difficulty. Slight variations in management, to suit the soil, and other peculiarities of the farm; the nature of the power to be employed in threshing, &c.; the requisite arrangements for shelter in exposed situations, when such situations cannot be avoided; and the nature of the ground on the site of the buildings, all tend to embarrass and prevent the application, in any single case, of all these principles in their integrity. The judicious designer knows

in such cases what to forego, and and what to secure; and endeavors, when a sacrifice has to be made, so to arrange, that all the more important principles may be observed and carried out.

Before concluding these remarks, it may not be amiss, in a sentence or two, to consider the *appearance* of out-houses, arranged on the principles here advocated. Premising, then, that we consider any attempt to mask or disguise the character of a building, as indicative of what, in ordinary language, is called bad taste; and that the expression of character and fitness, on the contrary, is in correct taste, we shall find that this expression of character and fitness in these buildings, can easily be obtained; in many cases the whole steading can be arranged symmetrically; and where this is not attainable, the extended lines of building, the archways, the varying outline caused by the different hights of the houses, and the numerous gables, harmonizing with that of the stacks in the barn-yard, never fail to give piquancy and picturesqueness. There ought to be no mock windows, mock doors, or arches; no false gables; let every thing be real, and expressive of its use; and trust to that expression, as the best æsthetic principle of design in such erections.

MR. HAMMOND, OF WORCESTER, MASS.

HIS MANAGEMENT, AND ITS RESULTS, ON A FARM OF 121 ACRES.

We transfer, with particular pleasure, from that excellent Journal, the American Agriculturist, the following notice of the "Farm of Mr. Hammond," but cannot get our own consent to do it without invoking to it the particular attention of the many, in other States of this Union, who, with four, and in many cases more than four times his number of acres, inherited, (not bought, like his, by their own labor,) are every year going behind hand, and in a fair way to be *sold out!* Who can reckon the value of examples of industry and good management, such as the one here exhibited? How happy must be such men—how justly proud have they a right to be, who thus enjoy the sense of *self-made independence!* How eminently worthy of being honored in the esteem of all who understand in what consists true dignity of individual character, and the true foundations of a Commonwealth's prosperity!

How striking would be the difference, if one had leisure to exhibit in all their features, the portrait of the industrious Farmer, on his small estate, keeping an exact account of outlay and income, studying to turn every thing to account, and finding his greatest pleasure in the regular husbandry and steady improvement of his own affairs; as contrasted with his neighbor on his 500 acres, who rides about the country in search of sensual excitement, answering the low purposes of narrow-minded partisans, leaving every thing at home to take its own course, without care or direction, until he reads his own ruin and disgrace in the Sheriff's list of executions, in the sighs of a broken-hearted wife, and the tears and rags of children beggared and degraded.

FARM OF MR. HAMMOND.

This farm lies in the town of Worcester, Massachusetts, and is one mile from the Court-house. It comprises 121 acres, 17 of which are in wood land, 8, if we remember right, still in unreclaimed bog meadow, and 4 are taken up with yards and buildings, leaving, in fact, only 92 acres actually in tillage. We are thus particular in this statement, in order to show our readers how much may be realized from a moderate-sized farm, of an ordinary quality of soil, when eligibly situated and properly managed.

But first of the man. Mr. Hammond is an excellent specimen of a hard-working New-England farmer. He began the world with little or nothing saving his own hands, a good constitution, active and industrious habits, and indomitable perseverance. He informed us that for the first six years after becoming of age, he worked out by the month for other farmers, and from his wages at the end of this time had saved enough to set up for himself; but it was not till 1835 that he was enabled to purchase his present farm. When he came on to it the land was in quite an exhausted condition, the fences indifferent, and the buildings so miserable, that neither man nor beast could inhabit them with any comfort. Now he has erected on it a noble barn of handsome architecture, 90 by 42 feet, which will hold 80 tons of hay, and has in addition numerous stalls for his cattle; built him a pretty two-story house, and several out-buildings; made new fences; planted an ample garden with fruits and flowers; set out a large orchard of choice apple-trees; drained nearly worthless bog meadows, and transformed them into the best of grass land; cleared off the stone and enriched his land so highly that he gets on an average 2 to 3 tons of hay per acre, 45 to 60 bushels of corn, and 40 to 50 of barley, where previously not half, and in some instances not one-third of these crops were gathered; and accomplished other things too numerous to mention: and all this, it must be understood, besides respectably supporting and educating his family, has been done from the earnings of the farm. Not a dollar is he in debt for it, and not a dollar has he brought in by foreign business to improve it, unless a few trades in selling off his aged animals, and buying younger ones to replace them, can be so considered.

How has this been done? we hear our readers ask. As we said in the beginning, Mr. Hammond's farm is within a mile of the town of Worcester, which affords a ready market for his hay, at the average price of $15 per ton, corn 75 cents per bushel, rye 87 cents, barley 75

cents, oats 33 cents, potatoes 30 cents, turnips 17 cents, milk 4½ cents per quart, and a good price for all the vegetables grown in a garden of between two and three acres. The farm now produces 75 to 80 tons of hay per annum; 150 to 200 bushels of corn; some barley, rye or oats; 800 to 1000 bushels potatoes; 400 to 500 bushels turnips: vegetables from the garden, and considerable fruit. The stock is 2 horses, 4 oxen, 17 cows, and a few swine. The cows are kept for the purpose of supplying the citizens of Worcester with milk.

When Mr. Hammond began his operations here, he informed us that in order to fertilize the nearly exhausted soil, he took his produce to market, and after disposing of it, brought back manure. But this proving a laborious job, and learning the value of muck as a fertilizer, and having any quantity of it in a bog meadow, he commenced carting it into the barn-yard during the summer, fall and winter, as he found time, spread the stable manure upon it, and thus ever since has made several hundred loads annually, of a compost quite equal, he thinks, to ordinary barn-yard manure.

The rotation of crops here is adapted to the situation and market. Grass land is plowed in the fall, the next spring highly manured broadcast, again plowed, and then well harrowed and planted with corn. The second year it is sown with barley. This grain is worth nearly as much as rye, and suiting this kind of soil well, nearly double the number of bushels per acre can be obtained of it that can be grown of rye. Grass seed is sown with the barley, and after that the land is kept in grass as long as it is thought profitable. Mr. Hammond's method of raising turnips is in accordance with an old practice in Massachusetts. The fore part of July the cultivator is passed up and down between the rows of corn, which cuts up all remaining weeds, and leaves the land free and light. Turnip-seed, of the common field kind, is then sown, and the men follow and give the corn its last hoeing. In performing this operation they cover the turnip-seed sufficiently well, and it usually produces about 100 bushels to the acre. One season Mr. H. got 650 bushels from four acres. We think it requires a very fertile soil or high manuring to warrant one in taking two crops at the same time; and though it may be presumptuous to differ from so good an authority, still we think if a single acre were devoted to ruta-baga, it would be better than raising the common turnip among corn, as the former is much superior to the latter in nutritive qualities, it keeps later and better, and 600 bushels may be obtained on an average from a single acre, and perhaps 800 to 1000 as highly as Mr. H. would cultivate them.

There are many other little things about this farm which we would gladly speak of had we space; suffice it to say, that Mr. H., so far from being satisfied with what he has already accomplished, thinks he is merely prepared now to realize something for his improvements. He will undoubtedly derive a handsome income from his farm hereafter, and manage it with much less labor. Yet this great truth has already been exemplified by him, namely, that land of a moderate degree of fertility, properly managed, can be greatly improved from its own resources, and at the same time respectably support those who cultivate it. For one, we feel grateful to Mr. H. for doing what he has, and we recommend all in his vicinity to visit his farm, and make themselves familiar with his practice; for a better example, as far as he has gone, we know not among our whole acquaintance.

ON THE ATMOSPHERE OF STABLES.

The frequent and violent exertions which man requires of the horse, renders it a matter of the highest importance that the animal's physical condition be as perfect as skill and attention can secure; and as there are no organs of this noble animal so severely taxed, during the performance of either fast or heavy work, as the organs of respiration, it is obvious that too much attention cannot be given to all circumstances which tend to secure perfection in the condition of that delicate apparatus which plays so prominent a part. A pure and uncontaminated atmosphere, in all respects suited to the process of respiration, is, therefore, a *sine qua non*; one cannot help, for these reasons, expressing surprise at the almost universal inattention to stable ventilation, which so lamentably prevails in even many of our first-class establishments. But there is no circumstance connected with domestic life that appears to me more extraordinary than the almost universal want of attention to scientific arrangements in the construction of modern buildings of every description, both public and private, from the largest theatre, or assembly hall, down to the cottage of the most humble peasant. It is not, therefore, wonderful that gross errors may be discovered in the tenements devoted to the accommodation of our domestic animals. That these occur to a much greater extent than many intelligent persons are aware of, I shall presently show. I hope I may confidently presume that most educated persons are aware that air once breathed by an animal is, by the simple process of respiration, converted into a deadly poison, and, therefore, should be instantly removed from its presence, and replaced by a proper supply of a pure and wholesome air. It is well known that the oxygen of the air is absorbed, and carbonic acid gas is thrown out at each expiration—a gas which neither supports life nor combustion: of the truth of this, the unhappy fate of the unfortunate sufferers in the Black Hole of Calcutta but too painfully demonstrates. I could cite, were it necessary, numerous familiar illustrations of this subject, but I have no doubt the following sample will serve to inform such of your readers as may not hitherto have given especial consideration to theories of respiration, and who are, therefore, unaware of the importance which attaches to the subject.

All have heard of the fatal accidents that frequently occur in breweries, from persons incautiously descending vats while these are surcharg-

ed with the products of fermentation. It is the carbonic acid gas which kills the individual in this case; and who is not aware of the danger of descending close, deep wells, where foul air has accumulated, and rendered the atmosphere obnoxious to human beings? Again, carbonic acid gas proves to be the baneful agent: few, perhaps, are cognizant of the fact, that if a bird be suspended from the roof of a closely-encompassed bed, the creature is speedily put to death—it is poisoned by exposure to the carbonic acid gas—the natural product of the respiration of the persons occupying the bed! Although this gas is naturally heavier than common atmospheric air, it nevertheless, when heated by the process of respiration, becomes much lighter, ascends, and occupies the space nearest the roof of the chamber where it may have been produced; so that persons near the floor, having a plentiful supply of cold air, may suffer no inconvenience, although they, most assuredly, by each act of expiration, are slowly and silently contributing to the destruction of the ill-fated victim in the cage. But the products of respiration, poisonous although they be, are the result of vital phenomena, and, therefore, cannot be dispensed with nor prevented; but the grand source of vitiation to which I am desirous to direct attention, is both removable and preventable, because it is dependent on the ammoniacal gas which is disengaged from the decomposing urine that is absorbed by the porous floors of stables. Now let me shortly describe the condition of stable-floors as these are usually (I may say invariably) constructed—and suppose we take a stall in the Piershill barracks as our text: nothing could be more unscientific than the arrangements which are here everywhere to be observed. All that seems to have been aimed at is merely to secure a hard and resisting footing for the animals, and that this may be effected at the cheapest rate, the following mode of procedure is practised:—Boulders, or irregular blocks of stone, are placed in a bed of sand, or small gravel, (I beg especial attention to this circumstance,) and it is believed that when these are made to present a fair surface, that the "job" has been creditably executed; but what are the facts? They are simply these: When the liquid manure of horses is dropped on such a floor as that which I have described, they rapidly percolate between the interstices of the irregular stones—decomposition immediately ensues, and deleterious gases are abundantly disengaged. I would, therefore, beg to press upon the attention of all whom it may concern, that the principle of rendering stable-floors impervious to moisture should never be lost sight of; without attention to this desideratum the most ingenious schemes for ventilation must be stultified! So rapidly do the component parts of urine assume the gaseous form, that it has surprised many to find, on examining an imperfect floor, that percolation has extended to so small a depth, but the true explanation of this circumstance no doubt is, that the recently-dropped urine comes in contact with materials in a high state of chemical action, which, like yeast to the wort, immediately induces a similar condition in the atoms of the recent materials, ammoniacal gas is formed, which ascends and pervades the entire apartment. The irritating ammoniacal gas I have frequently found, on going into a stable in the morning so concentrated that I could not breathe without coughing, and my eyes lachrymated as if a newly-cut onion had been hanging under my nose. Now, the products of respiration contributed but in an inferior degree to this state of vitiation. I repeat again, that it is impossible to preserve the purity of the atmosphere of a stable, while its floor continues pervious to moisture. I, therefore, cannot too strongly urge this fact upon the attention of every one who may find his stables in an objectionable and unwholesome condition; and it will be satisfactory to know that the means by which the desired improvement may be effected, involves neither difficulty nor expense.

Let the centre of the causewayed stall be removed 2 feet in breadth, and 5 feet in length, measuring from the croup end of the stall. Flags of sandstone pavement, of 1 foot in breadth, 3 inches thick, and of convenient length, having the inner or central edges beveled to such an angle as that when the two are brought together there will be a space or central gutter formed like an inverted V, 1¼ inch in breadth at the surface, and 2 inches deep at the apex of the inverted cone, which space must be filled with cement or pitch—a slight downward and backward inclination must be given to the paving-stones, so that whatever liquid may be dropped upon them, shall be rapidly conducted towards the hind quarters, and thence conveyed on the surface to the point in the exterior found most convenient for a tank, or reservoir, where it may be stored till required as manure. I find the making such an arrangement as I have shortly described would cost for materials about 10*s*. per stall—10 feet for each stall, and 10 feet for that part of the floor immediately behind the animal opposite his stall. A most superior article I know could be furnished by Messrs. J. Paton and Sons, of Ayr. The excellent quality of their sandstone, and the great advantages of their ingenious and powerful stone-cutting machinery gives to their establishment a peculiar claim to preferment.

I shall conclude this perhaps already too extended communication, by assuring gentlemen who may adopt such structural arrangements as I have proposed, that they will have no reason to regret their conduct; as to the pecuniary outlay which these improvements would require, you'll

"Let me whisper in their lug,
That's ablins nae vexation;"

because all that is to be done is to give their noble animals (whose faithful servitude deserve so well at their hands) credit for one year, as the following statement will clearly demonstrate.—A horse voids more than 3 lbs. of urine daily—or say—1100 lbs. per annum=21 lbs. ammonia =180 lbs. guano, 10*s*. So that he pays like a gentleman for the enjoyment of an unvitiated atmosphere.

In a future communication I will endeavor to give a popular description of the theory of ventilation, and the contrivances by which fresh air may be supplied to stables, and modes by which it should be removed when it becomes vitiated from natural causes. The necessity there is for rendering stable-floors impervious to urine appears to me so obvious, that I flatter myself no sensible man who may chance to cast his eye over this hurried and imperfect paper will hesitate for a moment in adopting some plan, which shall have the effect of rendering his stable-floors impermeable to liquids. Until this is effected, it is idle to talk about any ventilating scheme whatever; therefore, I say—Reform your Stable-Floors!!! W. D. Guthrie.

LETTER FROM GENERAL DEARBORN.

REFLECTIONS ON THE PROGRESS OF AGRICULTURAL IMPROVEMENT, AND THE POLITICAL AND MORAL INFLUENCE OF RURAL LIFE.

Hawthorn Cottage,
Roxbury, Mass. Aug. 29, 1845.

Dear Sir—I am extremely gratified with the first number of your Farmers' Library. I have read it with deep interest and great pleasure. Glad am I to find that you have again assumed a position which you so early, long, and honorably occupied, for the purpose of accumulating facts, truths, and principles, on all the numerous branches of rural economy, and reflecting back their concentrated radiance, for the benefit of that immense portion of the population of these United States who are practically engaged in tilling the earth, or delight to dwell in the midst of the naturally grand, as well as the artificially embellished scenery of the country.

Within this century, more has been done for the advancement of cultivation, from the humble cottager's rood of ground to the broad domain of the opulent, than in all preceding time, since the decadence of the most flourishing empires of antiquity. Science has come down from her lofty throne, and united the powers of Genius and Erudition with the physical energies of Art; while the Agriculturist, Mechanic and Manufacturer have discovered that they must be instructed by the lessons of Philosophy and the facts of Experiment, to ensure favorable results from laborious enterprise.

In this country, the occupation of the husbandman, and a residence in the country, have not been sufficiently appreciated; but, with the advancement of intelligence and the augmentation of wealth, we shall, like the Egyptians, Israelites, Persians and Romans, in olden time, and the British in modern, go out from the thronged and uncongenial cities, to find rational employment, real independence and substantial happiness in the healthful and agreeable quietude of a rustic villa.

How great and admirable is the moral influence of a HOME in the country! What pleasing associations are connected with that most significant Saxon word!—what thrilling reminiscences does it call up!—how comprehensive the terms! for it includes place, time, kindred, friends, and every event of the most interesting and never-forgotten period of our existence. It is within the sacred precincts of such a dwelling-place that the most exalted virtues are best inculcated and established; there is patriotism the most perfectly developed; there is piety the earliest and most certainly induced, and pure religion made manifest, by being good and doing good; there the most ardent and enduring parental and filial affections are implanted; there Letters, Science and the Arts have their altars; there sentiment, and profound thought, and all the endearing qualities of the heart, and the most lofty attributes of the mind, are evolved.—From the country, in all ages of the world, have gone up to the capitals of empires, the eminent statesmen, legislators, orators, jurists, and those mighty men who have commanded victorious fleets and armies, or guided the destinies of nations. From thence have come the great heralds of every science, the distinguished proficients in the Arts, and the illustrious disciples in the vast and various departments of Literature. It was in gardens, the umbrageousness of forests, and on the mountain-tops, that God and His revelations were made known to man; while the temples of Plutus have been reared in cities. Those great emporiums of commerce must be regarded only as immense ware-houses, where the products of the whole earth are to be received, bought, sold, and distributed; places where wealth may be accumulated, but not rationally expended; and therefore it is that the home of the nobles and affluent in England is in the country. In that nation, the intelligent, enterprising and ingenious, in every branch of human industry other than the tillage of land, seek fortunes in cities for the express purpose of ultimately being enabled to become proprietors of estates, and LIVE in the COUNTRY. It is that universal passion which has converted the island of Great Britain into a garden.

It is in cities, notwithstanding their external magnificence, that ignorance, vice and crime have their location. In their dark and endless labyrinths, misery, in its direst aspect, is endured; for the unfortunate and wretched have no home in cities—strangers are they in the midst of multitudes of strangers, where individuality is lost; they are left as entirely desolate, unregarded and hopeless, as if abandoned to destruction in the interior of a wilderness. Therefore, let the poor avoid cities, and become the happy inmates of a cottage; while the successful in the career of fortune should emulate the

example of Cicero and Pliny, Bacon and Scott, Washington and Madison, by retiring from the great Babylons of the nation, and encouraging Agriculture, by becoming its patrons—extending instruction by experiment—and exciting a taste for Horticulture, by the introduction of useful and ornamental trees, shrubs, and herbaceous plants, and the picturesque and beautiful embellishment of their grounds; and thus render themselves the honored benefactors of the present and all future generations.

With the highest respect,
Your most ob't serv't,
H. A. S. DEARBORN.

JOHN S. SKINNER, Esq.

JUDGE ROST ON THE PROGRESS OF AGRICULTURAL IMPROVEMENT.

WE have much pleasure in giving extracts from a Letter of Judge ROST, though not quite sure that it was written for publication. We deem it fortunate to have so soon attracted the regards and good-will of correspondents so well qualified, notwithstanding their self-distrust, to take a leading part in the accomplishment of the objects we have in view, as are those who have already come, kindly, to our assistance.

ST. CHARLES, Aug. 23, 1845.

Dear Sir—I received, long after its date, your kind letter, and the first number of the Farmers' Library, to which I request to be considered a subscriber. I have no doubt that, under your superintendence, that publication will be useful, and it will afford me pleasure to promote its circulation. I have no copies of my previous communications to the Agricultural Association of Louisiana, and, its records being kept at Baton Rouge, I cannot, at present, procure them.

Your wish that I should occasionally contribute to the pages of your periodical, presupposes in me abilities which I do not possess. The more I feel the importance of communicating to the Agriculturist the knowledge that should guide his art, the greater the difficulty appears to me of imparting that knowledge in the simple, concise, and exclusively practical mode suited to his usual education, his habits of thought, and his limited leisure. If it be gratifying to know that, in the study of Agriculture, the Schoolmaster is abroad, we must not forget that men cannot be taught faster than they can learn, and that the besetting sin of schoolmasters is, teaching too much.

Mr. Petzholdt's observation about the English agriculturists—that to do as their fathers have done, is deemed by them an unquestionable proof of wisdom—is incorrect, and casts unmerited censure on that sterling class of good men and true. To learn all that their fathers knew has been their constant practice, and that is an unquestionable proof of wisdom. But they have made, from time to time, important additions to that knowledge. If they have not oftener availed themselves of the aid of Science, it is because the votaries of Science have not, until lately, applied it with success to the objects of rural pursuit.

Agriculture, left, in a great measure, to its own resources, has continued to improve, and has obtained great results. Whoever compares with the England of the present day that which Cæsar invaded—a country covered with forests and marshes, where the inhabitants sowed no corn, and princes dressed with skins—will scarcely deny that Mind has had something to do with the change. The facts and the rules of action by which the change has been effected, form an important part of human knowledge; it is that knowledge which the agriculturist acquires from his ancestors. Learned professors may not call it Science, because it is not taught in Universities; it includes, notwithstanding, not only the art, but also the science of Agriculture; and it is vain to deny that both have, of late, advanced rapidly. The system of interchange of crops—the use of green crops—the improvements in the breeds of all domestic animals—thorough draining—subsoil plowing—the use of many new manures—are all recent and valuable improvements. At this stage of progress, experiments were being made in various places, to discover the best mode of applying manure, and the kind of manure best suited to each particular plant. Gypsum had already been found to be the food of clover—bone-dust that of turnips; and there is no reason to doubt that European agriculturists would, without assistance, ultimately have acquired the knowledge, which the Chinese are said to possess, of feeding plants with the various substances they require at the different stages of their growth. Liebig came, and gave direction to their researches; he told them what each plant is made of, and what it feeds upon in the course of its development, and also how they could procure the food it requires. Valuable as that discovery undoubtedly is, it forms no part of Agriculture, and belongs exclusively to Chemistry. That

science now guides the agriculturist in his investigations, as Astronomy and the compass guide the navigator in his course.

It is no way to entice agriculturists to the acquisition of knowledge, to begin by telling them that they and their ancestors have been heretofore ruled by prejudice and sunk in degrading ignorance; and if, in addition to this, it is attempted to make them forsake the plow for the purpose of learning, not the science of Chemistry, but its words and phrases, depend upon it they will dismiss the Schoolmaster, and say of him, as the Haberdasher said of Mr. Pickwick, "the honorable gentleman is a humbug." Tell them the truth—tell them that the experimental mode of investigation is right, and must not be changed; satisfy them that, by following it, they have learned much, and raised their art to the dignity of a science. Show them, then, in what manner Chemistry has lately placed within their reach the means of obtaining additional knowledge, and you may confidently trust them for the acquisition of it.

Very respectfully, your ob't serv't,
P. A. ROST.

J. S. SKINNER, Esq.

ON AN IMPROVEMENT IN THE MODE OF ATTACHING HORSES TO WAGONS.

BY J. H. GRIEVE.

HAVING observed amongst the topics proposed by the Society as subjects for prize essays, that of the use of one-horse carts, I thought it might be agreeable to you to receive some remarks relative to different modes of traction which have been suggested to me by actual observation, and which, so far as my knowledge extends, have as yet passed almost without notice.

There is no mechanical reason why a single-horse cart should possess any advantage over a four-wheeled wagon; and if that opinion has gained ground in this country, it is wholly to be attributed to the defective manner of application of horse-power.

In one-horse carts, a part of the load weighs upon the saddle placed behind the shoulders of the horse; and, as the principal fulcrum upon which he acts is concentrated in his hind-feet, it may, at first sight, appear that the load upon the back would assist in the effort of traction, and I have no doubt that it does so to a certain degree; but this small advantage is only gained at the expense of the muscular power of the animal, and has a natural tendency to exhaust and fatigue him.

If the use of wagons has hitherto proved unsatisfactory, the cause is merely that no sufficient care has been taken to ensure the *simultaneous* effort of the horses, so that a great part of their power becomes inefficient.

Nothing, indeed, can be more opposed to reason and good sense than the manner of yoking several horses in tandem that is usually practised both for carts and wagons, particularly in the south of England.

In the first place the shafts are often too much elevated, and then the shaft-horse is borne to the ground by the efforts of those that precede him, or he is made to swerve from side to side by the alternate jolting of the wheels, or by the leaders varying from the straight line of traction.

In the case of four-wheeled wagons, with horses yoked abreast, the traces of each horse are always fixed to the splinter-bar; it is more than difficult for the driver to ascertain if all his horses are exerting their strength together, and it is almost impossible for him, even with the utmost care, to force them to do so.

A much better method of yoking has been applied for ages past to the plow, viz. that of the swing-bar; but, strange to say, this system has not been adopted for carriages, with the exception of the leaders of stage-coaches; and this only proves that convenience, or, we may say, necessity, has been the primary cause of its being adopted at all, and not any sense of the superior mechanical arrangement of the system.

A little reflection will, however, show that this arrangement is better adapted than any other to produce simultaneous action—each horse being so placed respectively to his neighbor as to operate on a balance-beam; and it is self-evident that neither can draw unless the other acts as a counterpoise: the result is that the full and united force of the team is obtained for the purposes of traction.

For centuries past this system has been successfully applied in Belgium to the yoking of horses to four-wheeled wagons; and I could cite various instances of great loads conveyed in that manner, but will only mention a single instance of a load of goods which I myself saw weighed, and which was brought from Antwerp to the neighborhood of Mons, a distance of about 72 miles. The wagon was a very heavy one, with the wheel-tires 8 inches in breadth, and was drawn by five horses, and the load weighed fully 14 tons. Now when we take into consideration that several considerable acclivities had to be surmounted, at only two of which spare horses had been used, this example alone is sufficient to demonstrate the evident superiority of this system of traction. Doubtless the paved roads offer less friction than our usual macadamized ones, but this advantage will not account for the marked superiority of this load, which amounts, including the weight of the wagon, to about 3¼ tons per horse.

I may observe that in Belgium the load is strictly limited, by law, in proportion to the breadth of the tires, and that a greater load than

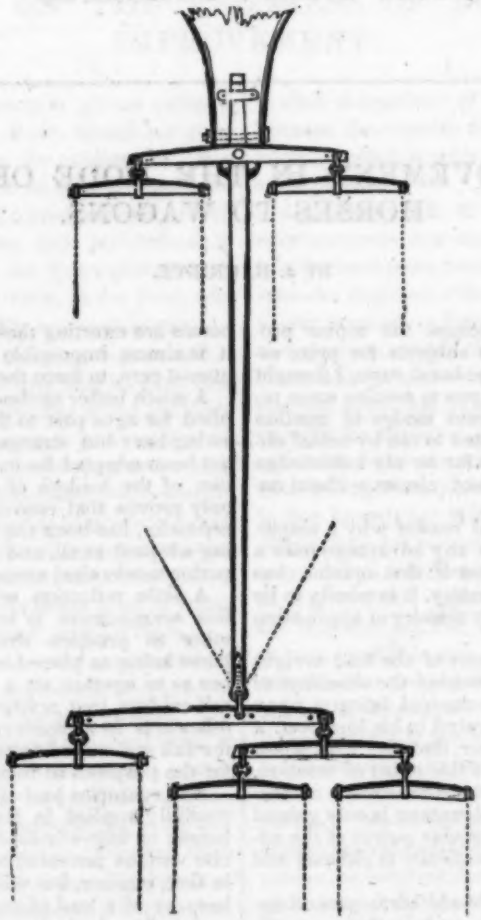
that above cited could not be conveyed during fresh weather; but instances have occurred of much heavier weights being drawn by the same number of horses, during hard frosts, when no injury can be done to the roads.

The horses usually employed on the road are of the old Flanders breed, the same as the common dray-horse in London, but evidently inferior to them in strength and weight.

Wagons of the same nature, but of a lighter construction, are also generally employed for farm purposes, and are found convenient and effective.

The Belgian Government have applied the same principle to the yoking of the artillery-trains; and it is certain that no guns of the same weight, and drawn by the same number of horses, would otherwise be able to traverse rough and uneven ground with the same facility.

It may be remarked that provision is made to adjust the leverage to the power of each horse, so that the pairs may be always equally matched, if not in strength, at least in their effective efforts. To explain this more clearly, I have subjoined a diagram representing the fore-train of a wagon adapted for five horses. It will be observed that spare holes are provided in the swing-bars to change the leverage.



N. B. It is curious, but nevertheless the case, that the whole team of five horses is guided by a single small line tied to the middle of the bridle-reins of the off-hand leader.

3 *King's Road, May* 12, 1845. [Jour. of Royal Ag. Soc. of England.

GRAFTING.—It is often, in grafting upon slender stocks and branches, very inconvenient to attach and support a great lump of clay, which, in spite of the greatest care and attention, will, either in very wet or very dry weather, crack and fall away. Last Spring I made trial of sheet Indi-rubber, cut into narrow strips or bandages, from ¼ to ¾ of an inch broad, which I applied to the graft—having first fixed the graft with bast—and with success. The India-rubber presents all the requisites sought for in clay; it is air-tight, and water-tight, and, moreover, it will not fall away; and it is elastic, which admits of the swelling of the scion in its growth, and it is applied with perfect ease and quickness. After wrapping the bandage round the graft and stock, as you would a linen bandage on a cut finger, the last turn only requires securing by tying with a bit of thread or thin bass; and it has a very light and neat appearance, when the operation is completed.

G. L.

PARING AND BURNING

Is a process much used in England for restoring old and foul land to cleanliness and fertility. In this country we have never seen it put in practice, except by Mr. Sotham, at Hereford Hall, near Albany. The operation is carried on with a facility and despatch that we should not have expected, and, as we are told, with results altogether satisfactory. We have seen so much land in similar condition, and therefore to all appearance inviting the application of the same process, that we have deemed it expedient to copy from Rev. W. L. Rham's Dictionary his description of the operation and its objects.

PARING AND BURNING.

This operation consists in cutting a thin slice from the surface of land which is overgrown with grass, heath, fern, or any other plants which form a sward by the matting together of their roots. The sods are allowed to dry in the sun to a certain degree, after which they are arranged in heaps, and burnt slowly, without flame or violent heat. The result is a mixture of burnt earth, charred vegetable fibre, and the ashes of that part which is entirely consumed.

The object of this operation is twofold: first, to kill insects and destroy useless or noxious weeds completely; and secondly, to obtain a powerful manure, impregnated with alkaline salts and carbonaceous matter, which experience has shown to be a very powerful promoter of vegetation.

The instruments by which this is effected are, either a common plow with a very flat share, which may be used when the surface is very level without being encumbered with stone or large roots, as in low, moist meadows; or, in most other cases, a paring-iron, which is used by hand. The crossbar of this instrument is held with both hands; and the upper parts of the thighs, being protected by two small slips of board, push the instrument into the ground, so as to cut a slice of the required thickness, which is then turned over by moving the cross-handle. The labor is severe, and a good workman can scarcely pare more than one-sixth of an acre in a day. The price of this work is from 15*s.* to 25*s.* per acre, according to the price of labor. The drying, burning, and spreading of the ashes are contracted for at from 10*s.* to 15*s.*, or more; thus the whole cost is from 25*s.* to £2 per acre. In France it is done by a *cob*, which is like a shipwright's adze, and the operation is called *écobuer*.

Paring and burning the surface is an almost invariable preliminary in the converting of waste lands to tillage; and where these lands are in a state of nature, overrun with wild plants which cannot be easily brought to decay by simply burying them in the ground, burning is the readiest and most effectual mode of destroying them. In this case the practice is universally recommended and approved of.

But it is not only in the reclaiming of waste lands, and bringing them into cultivation, that paring and burning the surface is practised. The fertility produced by the ashes, which is proved by the luxuriance of the vegetation in the first crop, has induced many to repeat this process so often as materially to exhaust the soil, and induce partial sterility. Hence the practice has been recommended on the one hand, and strongly reprobated on the other.

When we come to apply to the subject the test of experience, and reason correctly on the facts which are presented to us by the abettors of the practice and its adversaries, we shall find that the advantages and disadvantages arise chiefly from the circumstances under which the

operation is carried on. But it may be necessary to an impartial examination of the subject, to inquire into the changes produced on the substances subjected to the process of burning, when it is done with due precautions.

In burning vegetable matter in an open fire, the whole of the carbon is converted into carbonic acid and flies off, leaving only some light ashes containing the earthy matter and the salts which the fire could not dissipate. These are no doubt very powerful agents in promoting vegetation, when they are added to any soil; but they are obtained at a very great expense of vegetable matter, which, by its decomposition in the earth, might also have afforded food for vegetation. If the earth which is burnt with the sods is of a cold clayey nature, the fire will change it into a kind of sand, or brick-dust, which is insoluble in water, and corrects the too great tenacity of clays, by converting them more or less into loams. This is so well known that clay is often dug out of the subsoil to be partially burnt. On stiff clay soils, therefore, there is a double advantage in paring and burning, that of the vegetable ashes and of the burnt clay. When the fire is so managed that the vegetable matter is only partially burnt, the oily and inflammable portions being converted into vapor by the fire without being destroyed, and absorbed by the earth, the effect produced is only to impregnate the earth with minute particles of matter, readily converted into the constituent parts of vegetables. The earth is the mere recipient of these particles, which are held in its pores, as water is in a sponge, ready to be let loose to any substance which has the power of attracting them. The moisture, which the dry earth will also absorb from the atmosphere if no rain should fall, is retained and increased by the effect of the salts with which it is impregnated. It is uniformly observed that turnip-seed, which in most soils will not vegetate without heavy dews or rains, if sown in dry weather, scarcely ever fails to spring up in the ashes of a soil that has been pared and burnt. May not this be ascribed to these particles, which have been taken up by the earth in the operation of slow combustion, absorbing moisture from the air, and giving it out to the seed which has been sown? It does this better than a heavy shower would: a heavy shower soaks the ground for a short time, and swells the seed: but, if it be succeeded by a hot sun, the water evaporates so rapidly that the seed loses its moisture, and vegetation stops. The earth, which attracts moisture from the air, keeps it, its absorbent nature preventing the evaporation; and it furnishes it gradually to the vegetating seed as it is required. The wonderful effect of peat-ashes on young clover may be explained on the same principle, and probably also that of gypsum. There can be no doubt, then, that considerable advantages may result from the operation of paring and burning the surface of clays. But what is lost and destroyed in the operation? All that escapes in the shape of gas or vavor. The gas will probably be carbonic acid; for this is formed by the combustion of charcoal. We know that hot lime has a very strong attraction for this substance, which it fixes in a solid state, becoming a carbonate of lime; and we have no reason to think that it parts with it to the roots of plants. But other earths may absorb carbonic acid, without having so great an attraction for it, and let it loose to water, with which it is known to combine in certain proportions, and to be thus carried into the vessels of growing plants by the attraction of the roots. If this should prove to be the case, we may account for the great effect of burnt sods in promoting vegetation.

The principal objection to burning is, that it destroys a great portion of vegetable matter. But this is a fact to be proved, and is perhaps rashly taken for granted. When vegetable matter decays in the earth, it loses much of its substance, which is converted into volatile matter, and flies off into the atmosphere. It is possible that thus more is lost during the time that the slow decay goes on, than even in burning with due precautions. This is a fact which may be difficult to ascertain; but it is not impossible; and therefore the assumption of the contrary requires to be founded on some proof or experiment. The earthy portion of the soil may be diminished by driving out the water which it held, as is manifest in burning clay, and it shrinks into a smaller space; but there is as much earthy substance as before, and this substance is improved by the burning. It appears, then, that a clay soil may be pared and burnt, without its real substance being diminished; and if its texture is improved, it becomes more fertile by the operation.

Burning clay soils is in fact something analogous to liming. Lime dissolves the vegetable matter, and enables its elements to enter into new combinations; but if no new vegetable matter be added to restore what is exhausted by vegetation, liming, as well as paring and burning, is detrimental in the end. Many experienced farmers pare and burn the soil on the edges of their ditches and on the banks on which the hedges grow, because they thereby exterminate many rank weeds; and the burnt earth mixed with farm-yard dung makes an admirable compost. Here the burnt earth acts as an absorbent, and no doubt attracts many of the volatile parts of the manure, which are produced by the decomposition of animal and vegetable matter in it. Paring and burning, therefore, should be joined to manuring, if a powerful and immediate effect is desired without exhausting the soil; and in this case we do not hesitate to recommend it on all cold clay soils where rank weeds are apt to spring up, and coarse grasses take the place of the better sorts which have been sown. The proper time to pare and burn is evidently after the land has lain in grass for several years, and is broken up for tillage. The surface should be pared thin; about two inches is the extreme thickness allowable for the sod if the soil is very stiff and poor, and as thin as possible in a better soil. It should be done with a breast-plow or paring-iron by manual labor. The sods should be moderately dried, and then arranged into small heaps with a hollow in the middle to hold heath or bushes to kindle the fire. When it has fairly established itself, all the apertures should be carefully closed. Wherever any smoke breaks out, a fresh sod should be immediately put over it; a heap containing a small cart-load of sods should be smouldering for several days without going out, even if it rains hard. If the fire is too brisk, the earth will form hard lumps, and even vitrify; but otherwise it comes out in the form of a fine powder, in which evident marks of charcoal appear. If this is of a fine red color, it is a good sign; for the iron in the earth has been converted into a peroxide, which is perfectly innocent in its effects on vegetation;

whereas all the saline impregnations of iron are more or less hurtful. It is better to burn the sods in large than in small heaps; for the more the fire is smothered, the better the ashes.

So great a quantity of ashes is sometimes produced as to admit of a portion being carried off on grass land, or used to manure another field for turnips. As this is evidently robbing the field where the operation has been carried on, an equivalent quantity of manure should be brought in exchange. Perhaps the most advantageous mode of using the ashes is to spread them in the drills where the turnip-seed is to be sown, after a portion of dung has been buried under them. In this manner the ashes from one acre of land pared and burnt, together with ten or twelve cart-loads of good yard dung, will manure two acres, and all the manure of one acre, in the ordinary mode of raising turnips on ridges, will be saved. If the ashes will produce as good turnips with half the usual quantity of dung, the expense of paring and burning is amply repaid. But experience proves that the earth and ashes almost ensure a good crop of turnips in many poor stiff soils in which they would probably not have succeeded if sown in the common course of cultivation without bones or ashes.

When a considerable extent of poor land is brought into cultivation, and there is no sufficient supply of manure at hand, paring and burning a portion of the land every year, by which a crop of turnips is obtained, is a most effectual means of improvement. Lime may be used at the same time with the ashes, and will increase their effect, provided some vegetable undecayed matter remains in the soil after paring; but lime will tend to exhaust this; and if, in consequence of liming, a few good crops of corn are obtained at first, the soil will be so exhausted as to be of little value afterwards. This is the abuse of the practice which has caused it to come into disrepute. It would be a great waste to burn the surface of a rich piece of grass land where the plants growing in it are tender and succulent, and would readily rot on being plowed under; in such case a moderate application of lime would have a much better effect. This kind of land will produce good crops without any manure, and continue fertile for many years if judiciously cultivated. To pare and burn rich land is wasteful, and can never be recommended. It is only on poor land which has not strength to produce a crop, and of which the texture requires to be improved and its powers stimulated, that paring and burning is advantageous; on poor, thin, chalky soils that have been laid down with sainfoin, of which the roots and stems are grown coarse and hard, so as not readily to rot in the ground, the operation is proper and advantageous. The turnips produced by the ashes, with or without the assistance of dung, must be fed off by sheep folded on the land, whose dung and urine will enrich it, and their tread consolidate it. By this mode of proceeding great advantages are obtained from paring and burning, and the land, so far from being deteriorated, will be improved.

Many landlords rigidly forbid their tenants to pare or burn any part of their land, from an idea that the heart of it is destroyed by the burning. If they would would only insist on a certain quantity of dung being put on, either at the same time that the land is thus treated, or for the next crop, and prohibit the sowing of corn crops except after turnips, clover, or some other green crop consumed on the farm, there would be little danger of any detriment to the land, even if it were pared and burnt once in every ten or twelve years, provided it were judiciously treated in the intervals. The farmer would be benefited in many situations, and the practice would tend to keep up the value of the farms.

In Devonshire, where the land has been pared and burnt from time immemorial, even where the soil is rich, the practice has been often resorted to without any judgment. Provided a crop of corn or potatoes was obtained at little cost, the consequences to the future state of the land were not heeded; and landlords, seeing their farms impoverished, put a stop to the practice. Thus many useful modes of cultivation have been reprobated from the abuse of them, which, properly applied, would have been advantageous to all parties. There is no maxim more true than this; that whatever injures the landlord, injures the farmer who is not desirous of removing, and *vice versâ*; and all restrictions on cultivation, however necessary when there is a fear of dishonest conduct, diminish the value of a farm and lessen the rent which can be fairly afforded for it. Ignorance is often a greater destroyer of the interest of both landlord and tenant than wilful dishonesty; and the spreading of useful information among tenants, so that they may see their own advantage, is the surest means of improving landed property. Many tracts of waste land might be brought into cultivation by means of paring and burning, which without it would never repay the labor required. Where the soil is inclined to peat, this operation and abundant liming are the indispensable preliminaries of cultivation. The ashes and the lime will produce vegetation and food for animals. These will produce dung to supply what the vegetation abstracts, and to assist also in the farther decomposition of the peaty matter, converting it into vegetable mould.

The first crop after paring and burning, as was observed before, should, if possible, be turnips, and these should be consumed on the spot; but there are exceptions to the rule. The soil may be a stiff clay of a considerable degree of natural fertility, only encumbered with rank weeds and grasses. In this case the surface is burnt to destroy these, and a crop of corn may safely be taken after the paring and burning, the land coming into a regular alternate rotation after it. For example, the next crop may be beans or tares, with a good proportion of dung; or clover may be sown with the first crop, if the ground appears fit for it. The effect of the ashes will be readily perceived in the luxuriance of the clover. Such land may be afterwards cultivated, according to its nature and quality, with the rest of the farm; or laid down to grass after a course of cleansing and ameliorating crops.—Thus old wet meadows, after having been well underdrained, may be greatly improved, and either converted into arable fields or laid down again with choice grasses.

Old rough pastures may often be greatly improved by a very thin paring and burning, so as not to destroy all the roots of the grass. When the ashes are spread over the pared surface, some good grass-seeds are sown with them The whole is well harrowed or scarified and rolled, and the grass which will spring up after this will be greatly improved, and will fully repay the expense of this simple mode of renovating it. This is the cheapest mode of improving coarse pastures that we know, without breaking them up.

The partial paring and burning of the headlands of fields, for the purpose of mixing the ashes and burnt earth with dung in a compost, is a most excellent practice, and often superior to that of using the sods only, without burning them. These sods contain innumerable seeds of weeds, and eggs or maggots of insects, which are not destroyed by the fermentation of the heap, but, on the contrary, are brought to life. The loss of a portion of vegetable matter in the burning is amply compensated by the destruction of these enemies of the future crops.

It now only remains to take notice of the soils and situations where paring and burning cannot be recommended. Wherever the soil is very loose from a great proportion of silicious sand in its composition, and is held together chiefly by the slender roots which run through it, the burning would destroy the whole of the vegetable matter; for none of the volatile parts which the fire dissipates or generates would be retained or absorbed, but would pass through the loose sand in the same way that water would. Here then would be actual destruction; and the residue would be a mere barren silicious sand, much worse and more porous than it was when held together by the roots. The only way to bring such soils into cultivation is to put clay or marl on them, and to force vegetation by means of liquid manures, chiefly the urine of animals, consolidating them by every means applicable, so that they may retain moisture, and that the manure may not be washed through by the rains. Such soils may be improved, but they are the most ungrateful of any; and it is only necessity and indefatigable industry which can make them produce any crops.

It is very easy to ascertain whether any soil will be improved or not by paring and burning. A few sods may be taken and exposed to heat in an iron pot closely covered over, or in a large crucible: the heat should not be so great as to produce light, but should be kept up for a considerable time, till the sods are consumed. If the ashes are red, and the whole is a fine powder, with particles of charcoal in it, the soil from which it was taken may be safely pared and burnt, especially if it forms a mud with water, and the earth is not readily deposited. But if it feels gritty, lets the water readily through, and is soon deposited when mixed with it, burning will not be advantageous. This is the evident result of the principles laid down before.

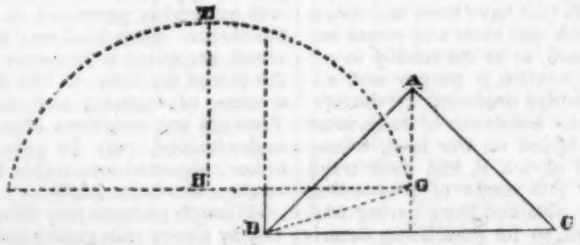
On the whole, the operation of paring and burning, when judiciously applied and properly performed, is a most excellent and cheap improvement of certain soils, and it will never diminish their fertility, if they are properly cultivated and manured, and a judicious succession of crops is adopted; but on the contrary it will improve their quality and texture, and make them more productive.

THE CENTRE OF GRAVITY.

We have heretofore alluded, but only incidentally and scarcely in a way to make ourselves understood, to the various studies which, (although the connexion is not at first apparent,) are yet necessary to the most efficient practice of the Agricultural art. Among these, the *general principle of Mechanics* should be esteemed as of the highest importance. We will suppose them to be inculcated in Common Schools, by means of lectures and illustrations, clear and simple as we find the following, for instance, in part of one of *Dr. Lardner's Lectures* on THE CENTRE OF GRAVITY; and who does not see how useful through life would be tuition of this sort:

When the line of direction falls within the base, bodies will always stand firm, but not with the same degree of stability. In general, the stability depends on the hight which the centre of gravity must be elevated before the body can be overthrown. The greater this hight is, the greater in the same proportion will be the stability.

Fig. 23.



Let B A C, fig. 23, be a pyramid, the centre of gravity being at G. To turn this over the edge B, the centre of gravity must be carried over the arch G E, and must therefore be raised through the hight H E. If, however, the pyramid were taller relatively to its base, as in fig. 24, the hight H E would be proportionally less; and if the base were very small in reference to the hight, as in fig. 25, the hight H E would be very small, and a slight force would throw it over the edge B.

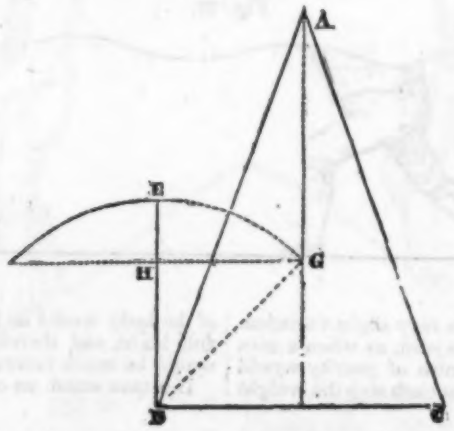
It is obvious that the same observations may be applied to all figures whatever, the conclusions just deduced depending only on the distance of the line of direction from the edge of the base, and the hight of the centre of gravity above it.

Hence we may perceive the principle on

which the stability of loaded carriages depends. When the load is placed at a considerable elevation above the wheels, the centre of gravity is elevated, and the carriage becomes proportionally insecure. In coaches for the conveyance of passengers, the luggage is therefore sometimes placed below the body of the coach; light parcels of large bulk may be placed on the top with impunity.

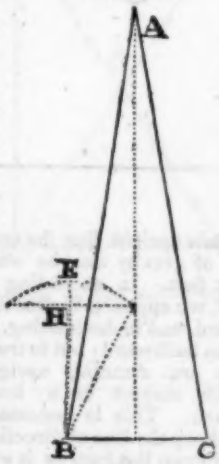
When the centre of gravity of a carriage is much elevated, there is considerable danger of overthrow, if a corner be turned sharply and with a rapid pace; for the centrifugal force then acting on the centre of gravity will easily raise

Fig. 24.



it through the small hight which is necessary to turn the carriage over the external wheels.

Fig. 25.



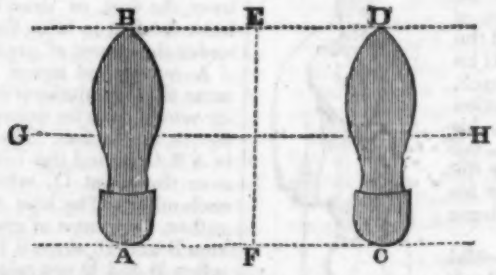
The same wagon will have greater stability when loaded with a heavy substance which occupies a small space, such as metal, than when it carries the same weight of a lighter substance, such as hay; because the centre of gravity in the latter case will be much more elevated.

If a large table be placed upon a single leg in its centre, it will be impracticable to make it stand firm; but if the pillar on which it rests terminate in a tripod, it will have the same stability as if it had three legs attached to the points directly over the places where the feet of the tripod rest.

When a solid body is supported by more points than one, it is not necessary for its stability that the line of direction should fall on one of those points. If there be only two points of support, the line direction must fall between them. The body is in this case supported as effectually as if it rested on an edge coinciding with a straight line drawn from one point of support to the other. If there be three points of support, which are not ranged in the same straight line, the body will be supported in the same manner as it would be by a base coinciding with the triangle formed by straight lines joining the three points of support. In the same manner, whatever be the number of points on which the body may rest, its virtual base will be found by supposing straight lines drawn, joining the several points successively. When the line of direction falls within this base, the body will always stand firm, and otherwise not. The degree of stability is determined in the same manner as if the base were a continued surface.

Necessity and experience teach an animal to adapt its postures and motions to the position of the centre of gravity of his body. When a man stands, the line of direction of his weight must fall within the base formed by his feet. If A B C D, fig. 26, be the feet, this base is the space A B C D. It is evident that the more his toes are turned outward, the more contracted the base

Fig. 26.



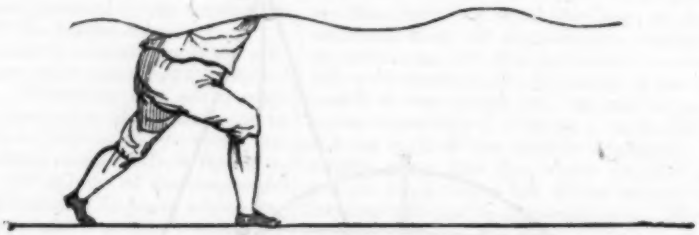
will be in the direction E F, and the more liable he will be to fall backward or forward.—Also the closer his feet are together, the more contracted the base will be in the direction G H. and the more liable he will be to fall toward either side.

When a man walks, the legs are alternately lifted from the ground, and the centre of gravi-

ty is either unsupported or thrown from one side to the other. The body is also thrown a little forward, in order that the tendency of the centre of gravity to fall in the direction of the toes may assist the muscular action in propelling the body. This forward inclination of the body increases with the speed of the motion.

But for the flexibility of the knee-joint, the labor of walking would be much greater than it is; for the centre of gravity would be more elevated by each step. The line of motion of the centre of gravity in walking is represented by fig. 27, and deviates but little from a regular horizontal line, so that the elevation of the centre of gravity is subject to very slight variation. But if there were no knee-joint, as when a man has wooden legs, the centre of gravity would move as in fig. 28, so that at each step the weight of the body would be lifted through a considerable hight, and therefore the labor of walking would be much increased.

Fig. 27.



If a man stand on one leg, the line of direction of his weight must fall within the space on which his foot treads. The smallness of this space, compared with the hight of the centre of gravity, accounts for the difficulty of this feat.

Fig. 28.

The position of the centre of gravity of the body changes with the posture and position of the limbs. If the arm be extended from one side, the centre of gravity is brought nearer to that side than it was when the arm hung perpendicularly. When dancers, standing on one leg, extend the other at right angles to it, they must incline the body in the direction opposite to that in which the leg is extended, in order to bring the centre of gravity over the foot which supports them.

Fig. 29.

When a porter carries a load, his position must be regulated by the centre of gravity of his body and the load taken together. If he bore the load on his back, fig. 29, the line of direction would pass beyond his heels, and he would fall backward. To bring the centre of gravity over his feet, he accordingly leans forward, fig. 30.

If a nurse carry a child in her arms, she leans back for a like reason.

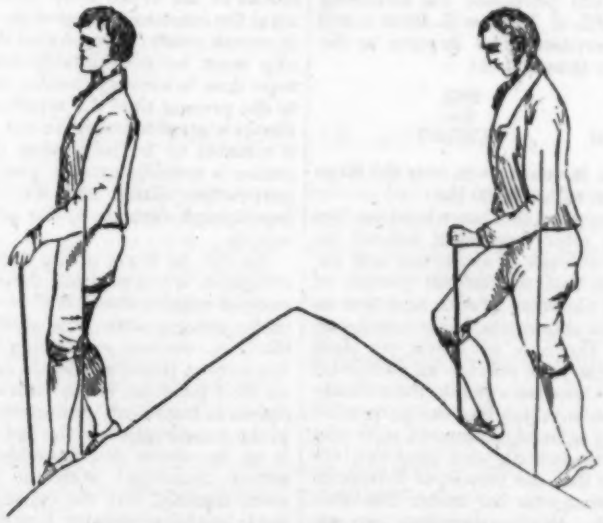
When a load is carried on the head, the bearer stands upright, that the centre of gravity may be over his feet. In ascending a hill, we appear to incline forward, and in descending, to lean backward; but in truth we are standing upright with respect to a level plane. This is necessary to keep the line of direction between the feet, as is evident from fig. 31.

Fig. 30.

A person sitting on a chair which has no back, cannot rise from it without either stooping forward to bring the centre of gravity over the feet, or drawing back the feet to bring them under the centre of gravity.

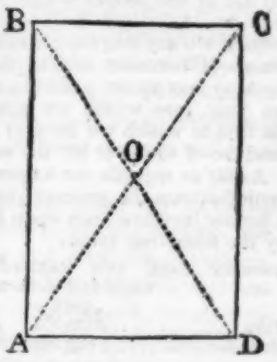
A quadruped never raises both feet on the same side simultaneously, for the centre of gravity would then be unsupported. Let A B C D, fig. 32, be the feet. The base on which it stands is A B C D, and the centre of gravity is nearly over the point O, where the diagonals cross each other. The legs A and C being raised together, the centre of gravity is supported by the legs B and D, since it falls between them; and when B and D are raised, it is, in like manner, supported by the feet A and C. The centre of gravity, however, is often unsupported for a moment; for the leg B is raised from the ground

Fig. 31.



before A comes to it, as is plain from observing the track of a horse's feet, the mark of A being upon or before that of B. In the more rapid paces of all animals the centre of gravity is at intervals unsupported.

Fig. 32.



The feats of rope-dancers are experiments on the management of the centre of gravity. The evolutions of the performer are found to be facilitated by holding in his hand a heavy pole. His security in this case depends, not on the centre of gravity of his body, but on that of his body and the pole taken together.—This point is near the centre of the pole, so that, in fact, he may be said to hold in his hands the point on the position of which the facility of his feats depends. Without the aid of the pole, the centre of gravity would be within the trunk of the body, and its position could not be adapted to circumstances with the same ease and rapidity.

The centre of gravity of a mass of fluid is that point which would have the properties which have been proved to belong to the centre of gravity of a solid, if the fluid were solidified without changing in any respect the quantity or arrangement of its parts.

IMPORTANT TO WOOL-GROWERS.

A REVIEW OF THE PAST, PRESENT, AND FUTURE STATE OF THE WOOL MARKET.

THE consumption of English Wool during the last twelve months has unquestionably been on a larger scale than at any former time. And during the last four or five months the heavy stocks held (in the latter half particularly) last year have been very greatly reduced, and have presented the contrast with last year, that, so far from the stocks of Wools of English growth being unusually large, they were probably never known to be so small. The effect which might have naturally been expected, from the small stocks of English Wools, has been counteracted by two prominent causes:—First, notwithstanding the extraordinary increase of the import of foreign Wools in 1844, that of the present year shows an increase over last year comparatively as great. And, second, some branches of trade in which English Wools are largely used, especially that of Bradford, have been exceptions to the general brisk and highly remunerative character of the generality of manufactures. As compared, therefore, with this time last year, we conclude the season with probably a smaller quantity of English Wool on hand, of former years' clip, than has existed for many years; while last year, at the same time, it was somewhat larger than usual.

By the accounts which we have this day published, in our "Monthly Supplement," of the quantities imported from the 5th January to the 5th May, we find the following comparison with respect to the imports of Wool:

Wool imported, Jan. 5 to May 5.		
1843.	1844.	1845.
lbs.	lbs.	lbs.
7,273,118	10,800,430	14,529,273

This is the latest date for which we have any

accurate accounts for the whole kingdom; but from information, on which we can sufficiently rely for all practical purposes, the following month, up to the fifth of June, will show a still greater relative increase. The imports to the 5th of June may be thus stated:

1844.	1845.
lbs.	lbs.
14,650,430	19,705,593

Thus exhibiting an increase, even over the large imports of last year, of 5,000,000 lbs.

In looking, however, at this large increase, we are led to believe, after somewhat minute investigation, in the absence of any actual and authoritative account, that the largest portion of the increase is of Colonial Wools, and that in consequence of the shipments being much earlier than usual. There is no doubt we shall again, in the present year, receive an additional quantity from the Colonies, equal to their steady increase, but not in anything like the proportion which has already arrived, compared with last year. As far as our investigation goes, we are induced to believe that the import of European Wools in the present year has rather diminished than increased. While, therefore, we unquestionably have a smaller stock of home grown Wools, we have a larger one of those of foreign growth, though the latter may merely be in anticipation of shipments which arrived at a later period last year.

The re-shipment of Foreign Wools has also been on a smaller scale even than last year.

The whole of the quantity imported has been retained for consumption, except the trivial quantity of 275,325 lbs.

But the export of English Wools, however, shows a considerable increase in comparison with former years.

EXPORTS OF ENGLISH WOOL FROM JANUARY 5 TO MAY 5.

1843.	1844.	1845.
£92,966	£53,126	£152,491

So that, at an average of 15*d.* per lb., the quantity of English Wool exported to the 5th of May was equal to 1,639,856 lbs.

In forming an estimate of the supply of the future portion of the year, we will first advert to the circumstances which we think likely to affect the supply of home-grown Wools. There seems now to be no doubt entertained by any one that the clip of the present year will be considerably less than an average quantity.—The long and severe winter, and the great scarcity of fodder, no doubt operated to induce the farmers to send an unusually large quantity of sheep to market, so that the number yielding fleeces will be much fewer at this clip than in recent years. Moreover, there is no doubt that the same causes have operated in making the average weight of each fleece less than usual. In some parts of the country, especially in some of the counties south of London, this deficiency has been carefully estimated at *one-fifth*; but, taking the average of the whole county, and from both causes, the lowest estimate of deficiency is from *one-eighth* to *one-tenth*.

From inquiries which we have instituted, we much fear that similar causes will operate in every part of Europe to produce lighter fleeces, and, in all the popular districts, a considerable dimunition of their number. We cannot doubt the dimunition of the whole clip on the Continent will be at least equal to that in this country. We are, therefore, brought undeniably to these conclusions:—First, that not only in England, but also throughout the Continent, the stocks of old Wool were more closely worked up at the commencement of the present clip than in recent years; second, that the produce of the clip must be considerably less throughout Europe than in average years; and, third, that up to the present time the report of Colonial Wool shows a great increase on any former year; but it remains to be seen what portion of that increase is actually greater production, and what part merely earlier arrivals. These are all the accertained facts as to the present and future supply.

As far as regards the existing rate of consumption, we apprehend there can be no difference of opinion that it is in every department of trade greater than at any former period, and likely to continue so in every branch, unless the spinners at Bradford should be induced to lessen their produce, on account of the prices they obtain being barely remunerative. With regard to the consumption of the last three years, there is an important feature which every close observer connected with the trade must have seen, namely, that the consumption of each of these has been greater than the actual growth and import, and has been made up by the gradual use of the stocks which accumulated from 1839 to 1842; and it is certainly within the truth, if we say that the consumption of the three years—Midsummer 1842 to this time—has been equal to four years' growth; and that the present year, into which we are now entering, is the first in which we have to rely simply on the produce of the year for the supply of the year.

As far as regards our export trade of woolen manufactures, the present year, so far, exhibits a farther increase even upon last year, as shown by the following table:

WOOLEN YARN AND MANUFACTURES EXPORTED FROM JAN. 5 TO MAY 5.

	1843.	1844.	1845.
Yarn	£125,774	£210,439	£273,930
Manufactures	1 802,782	2,351,884	2,483,916
Total	£1,928,556	£2,562,323	£2,757,846

The present year is still in excess of last year, notwithstanding the large falling off to India, the United States, and some other important markets. We know of no good reason to apprehend any falling off during the rest of the year in this branch of the trade.

With regard to the home consumption, we have the best grounds for anticipating, not only a continuance of the late demand, but a considerable increase during the Autumn and Winter. There is no doubt the laboring population are now in a better state than they have been for a long time; and, as the railway projects come into activity during the Autumn and Winter, the quantity of employment will, with other branches, be greater than for many years past. We cannot, therefore, but anticipate a great increase in the home consumption of Wools, in common with all other goods and produce during the next year.

The considerations and facts which we have now adduced, as likely to affect the price of Wool, are strong in favor of its future prospects, inasmuch as stocks on hand are comparatively light, and the whole European supply will be considerably deficient, while the general consumption is likely not only to be sustained, but even increased, if not cheked by too sudden a rise in price, which would be very prejudicial to all parties. [English Farmers' Magazine.

THE STATE FAIR AT UTICA

Came off according to appointment, and passed without rain, dust, or accident of any kind, to mar the satisfaction of any one of the many thousands every day in attendance, unless it be the slight chagrin which may have been felt by those who were disappointed in their sanguine expectations of bearing off prizes.

To suppose that some of these were not mortified, would be to presume a feeling of apathy unworthy of the occasion, and one which merits if it does not ensure the defeat of those who feel or affect it. But with men of true spirit, all disagreeable impressions, from such cause, are quickly brushed away, by the patriotic reflection, that what they esteemed good of their own, has been met by something better exhibited by a neighbor; thus showing that the general course of improvement is onward, and that victory in every department of rural industry is now only to be won by great exertion and great excellence.

Bearing in mind the comparatively high price of the Farmers' Library, yet not high in proportion to its volume and costliness of publication, its whole space must be economised and usefully appropriated. The question arises then how far it can be expected to embrace full accounts of all agricultural exhibitions, many of the particulars of which possess but a local interest, imparting only the fact, that particular premiums were awarded to A and B for best Sheep or Cattle, without conveying information of any new discovery or truth of general applicability and usefulness. Yet as *State* Fairs are open to competition from the whole commonwealth, and in this, and it may be in other States, materially assisted by State funds, it may be expected that a work designed for reference should record for that purpose the authentic results of such general competition.

As far, then, as at present advised, we have concluded that the proper course will be to journalize, from year to year, the distribution of prizes at the Annual Fair of the New-York State Agricultural Society, accompanied with such suggestions as may appear pertinent to the occasion, and likely to contribute to the true designs of the Institution.

We are much disposed to commit ourselves at once to the same course as to all *State* Exhibitions, to the end that the Farmers' Library may be looked to as an official repository of transactions at all these general displays of farming industry, reserving the privilege of such brief notices of the proceedings of local societies as may appear worthy of particular animadversion and subservient to the interests of Agriculture—and now, then, for the late Fair at Utica—extenuating nothing, nor setting down aught in wilful or unjust disparagement.

In the first place, it is to be observed that this was not the first, nor the second, but the *Fifth* Fair of a Society patronized by the State, and held only at intervals of one year. Five years have elapsed, then, within which to bring out improvement on improvement, in all the departments of State husbandry; within which to bring to light discoveries in compounding and using manures—in the trials of new staples and systems of rotation and cultivation—in the invention of new implements and machines to save labor, and to accomplish more perfect tillage—for all this would do more for the permanent benefit of Agriculture, than the mere *show* of animals, grains, vegetables, fruits and flowers. In the display of *these*, have competition and rewards been followed by general and marked improvement? In a word, the question is, did the exhibition which attracted an immense concourse of spectators, and which to all appearance gave so much satisfaction to the multitude, serve to elicit many new or important discoveries in agricultural economy, or, on the whole, to illustrate that progressive accession of knowledge and amelioration in the practice of the agricultural art, which every year ought to be expected to realize, among a sagacious and vigilant people.

As, in such cases, large contributions are expected to come from the county and town in which the Fair is held, it is but fair in this instance to bear in mind that *Oneida* is by far the most populous county in the State, except New-York, having now more than 100,000 inhabitants; yet, on the other hand, if the Census is to be trusted in any thing, there are counties which fall far behind it in population that exceed it as much in the number employed in Agriculture, as they do in their agricultural products. For example, while Lewis county is put down as having in 1840 a population of only 17,830, it is reported as having 17,629 Horses, or about one Horse for each person; 78,694 Neat Cattle; 165,390 Sheep, and 60,518 Swine; while Oneida with, at that time, 85,310 inhabitants, had but 7,604 Horses, 20,752 Neat Cattle, 40,531 Sheep,

and 20,344 Hogs. It seems clear, therefore, that this great county of 1,200 square miles, forming the summit level between the basins of the Hudson and the St. Lawrence, with the Mohawk rising in its centre and other springs that pour their waters from its bosom into Erie, Ontario, and the Susquehanna, makes no pretensions to *agricultural precedence*, and may, therefore, be excused for not sending to the Fair held at her capital, the proportion of good things, as will be more particularly seen by reference to the list of premiums awarded, that might otherwise have been expected.

Again, it is to be considered that the commendable and judicious liberality of the Railroad and Steamboat companies, in taking things free to and from the exhibition, corresponding in that respect with the practice in England, serves to place distant on a footing with proximate counties, and helps to account for the absence of that precedence which the very large and populous county of Oneida had been expected to claim and to make good.

To begin with the *Horse*—that most showy and popular, though not most useful of domestic animals:—the display of Stallions was large in proportion to that of other descriptions of Horses, as usually happens on such occasions, they generally appearing on the ground, as do some other characters, for electioneering purposes. Considering the apparent equality, to unpractised eyes, of several in the several classes for which premiums were offered, it was perhaps fortunate that the decision of the judges should have been, in all cases, unanimous. The public will thence infer that the grounds of preference must have been decisive, and perhaps the more readily acquiesce in the justice of the awards.

Their emphatic declaration, in their report, of the importance of *high breeding*, as the sheet anchor, that, if abandoned by the breeder, must lead to infinite degeneracy, ought and doubtless will have its happy effect; and nowhere, surely, is it more important to observe the true principles of breeding than in this State, which continues to levy immense contributions on the indolence and improvidence of some Southern States, who send as regularly to New-York, for all their fashionable Horses, as they do for their hats and their coats, their shoes and their shirts—yes! for in the upper part of this city there is a *steam engine* employed in giving the last finish of a plaited bosom to shirts for the southern cities.

"CONSTERNATION," a horse lately imported from England, to the consternation of some of his competitors, bore off the prize for the "best thorough-bred Stallion." He was said, by his owner, Mr. C. A. ALBOT, to measure 15 hands 3 inches, under the standard. He presents a forehand delicate and superb, and is of the highest finish throughout, without a particle of superfluous bone or beef about him. Thus much may we be allowed to say, though restrained from high commendation or criticism which might be bestowed on others, for want of time and space, even though it should not be deemed invidious. Being *the* premium Horse, we have reason to expect from the owner such facilities as will enable us to present to the patrons of the Farmers' Library his portrait and pedigree.

As to Neat Cattle, a most important department, one would think, in the estimation of farmers, who could make such a fine display of dairy products as was here exhibited; it did not present so great a number of new competitors as might have been anticipated. In this branch, the show would indeed have been a beggarly one of empty boxes, if the fine animals had been withheld, which had already been seen and admired at previous exhibitions, and which are in that way becoming as it were stereotyped in the public eye—of these it is true, thanks to their public spirited owners, we had perfect models of their breed of Short-Horns, Herefords, and Devons—and on all such occasions it is important to have models new or old, as standards which farmers should aspire to equal, and even to drive from the ground, by something yet a little superior. Not having time however, if we possessed the ability, to make observations in greater detail, such as we could hope would be profitable to the reader and the cause, it affords us much more pleasure to give place to the following more favorable impressions of those who were more competent if not more anxious observers. To the able and vigilant Editor of the Albany Evening Journal, who, we may presume, was on the ground, we are indebted as well for the following summary, as for all the particulars that will be given in the sequel:

"The exhibition of Stock was said by disinterested judges to be the best ever witnessed in New-York—and some even said the Union. It is an old saying, that what every body says must be true, and we do not, therefore, feel at liberty to gainsay the correctness of this claim.

"We find, by a statement in the Utica Gazette, that there were upon the ground, '48 Durham cattle, 11 Hereford, 9 Devon, 4 Ayreshire—72 in all of foreign breed, 37 native and cross, 21 native, 124 Oxen, 12 Steers and 8 fat cattle—making in all 274 horned cattle. Of Horses 114 in all, viz: 28 stallions, 36 matched, 7 geldings, 32 mares and colts, and 10 colts. Of Sheep there were 64 long wooled, 112 middle wooled, 58 Merinoes, 23 Saxons. To the above kinds adding 34 Swine, we have a grand total of 683 as the number of four footed beasts at the Cattle Show.' Taking it for granted that the live stock, in number and quality, exceeded those of previous years, and that there was a falling off in other particulars, it is not far from the right average to place this Fair on a par with its predecessors. It *should* have exceeded all.

"The address was delivered in the afternoon

by JOSIAH QUINCY, Jr. Esq. of Boston. As every body who knew the speaker anticipated, the effort was a noble one, and we doubt whether the addresses of any previous year, ever gave more univeral satisfaction."

What is said of the Address, is confirmed by the common opinion of those who heard it. We had not that good fortune, as the rostrum was in quite a different place from that which had been pointed out to us; and before we were apprised of the change, an immense jam of auditors made the Orator both inaccessible and inaudible from any point we could reach. Just enough could be seen to let us observe that he appeared to be master of himself and his subject, and to deliver his sentiments with not a little of that graceful and persuasive manner which reminded one of an anecdote related of the celebrated WHITFIELD, "the Paul of his sect," who was addressing a vast crowd of many thousands, when an old woman was seen on the confines of the multitude, far beyond the Orator's voice, to be in convulsions of admiration. A gentleman standing near, and lamenting the loss of what was stirring to their foundations the sensibilities of all around, said to her, "How is it, good woman, that you are so deeply moved at what you cannot hear?" "Ah! sir," said she, but *can you not see the godly wag of his head?*" In this case it was obvious that what the Orator was saying was greedily devoured by his auditors; and those who could not hear, like ourselves, departed with the next greatest pleasure—the expectation of reading the praises of Agriculture, now becoming fashionable, from so accomplished an amateur and one of good blood; for truly, if good predilections are hereditary, Mr. QUINCY ought to wish well to and take delight in it—as we remember about the time he graduated, to have been most kindly taken by the arm, on being presented to his venerable father, and at once marched through his *Vaccine Institution*, where at that time he had many *cow-boarders*, at, we believe, $40 a year for meat and lodging, with no view, that we could discern, but to illustrate practically the advantages and economy of his favorite *soiling system*. Among these lactiferous personages was the celebrated "*Oaks Cow*," of obscure, unpretending American ancestry, but whose prodigious contribution of 484 pounds of butter in eight months and a half, gave everlasting celebrity in dairy annals to the name of her owner, *Caleb Oaks*, and her Ladyship.

In the account of Premiums, made up from the *Albany Evening Journal*, we have omitted the *amounts* given in each case—the grade of merit forming the true question. Moreover, we confess that we could never be entirely reconciled to the practice of giving *money* premiums, instead of less sordid and more durable, even if they should be less costly memorials—such as, however small in money value, might yet be displayed with acknowledged and laudable pride in the old family cupboard or on the sideboard or the mantle, or treasured away among the household valuables as so many tangible trophies of honorable ambition and success; trophies to be transmitted from generation to generation as incentives to honorable emulation—heir-looms, by which our posterity may swear that their blood has *not* crept through drones, insensible and unambitious of distinction in any line of usefulness. In this feeling we should like, we must confess, to enjoy the consciousness of association with men who would value an old tea-spoon bearing a *mother's name*, and inscribed for best knitting or needle-work, more than any amount of greasy lucre won for a fat hog, and spent again on no one knows what.

By the bye, taking but a cursory view of the list of premiums, and doing homage to the good intentions and judgment of those who arranged the scale, some of them still strike us as not exactly just or expedient. For instance, much as we suppose was owing to the management of the *Housewife*, in gaining premiums for the products of the Dairy, the Garden, and various branches of Domestic Economy, only two or three Ladies took some small premiums, and only as many more were in any way noticed!—Would it not be well, seeing how much men are disposed to monopolize all honors and employments, that in all cases where excellence is found in articles produced chiefly under the eye and management of the good housewife, that the honor and the reward should be bestowed accordingly? For humanity's sake, society should be so organized, its industry so regulated, and its opinion so shaped, as that it should be deemed disreputable for any *man* to exercise employments to which a woman's strength is adequate, and which, in the view of a soundly constituted public judgment, she could perform with propriety. But on this subject we dare not trust ourselves.

Again: As to the scale of premiums, (and we desire not to be understood as applying our remarks to this occasion in particular, but only to take advantage of it for a general purpose,) is there any thing, let us ask, connected with the life and management of American Farmers, in which they expose themselves to more just censure, than in their neglect to provide for their table and family enjoyment the *various fruits in their season* which are known to be as conducive to health as they are congenial to our climate? Would anything better indicate that reform in our national taste so much to be coveted by all who have regard for national well-being, and even character, as the substitution of various fruits and vegetables, for the great joints of fat meat that load even to surfeit the tables

alike of the poor and the rich, the public and the private house. We do not mean exotics to be stimulated under glass or other costly process, and after all possessing neither the fragrance or sweetness that Nature yields to solicitation, never to force; but we call for, as due to the welfare and the reputation of every respectable Farmer, a full supply of choice plain fruits in their seasons, such as can be obtained by, and only by, the continued exercise of skill and close personal attention, and some study, from year to year; and are not these means within the reach and capacity of every industrious Farmer? and is not the object worthy of the highest stimulus of honor and reward *that a society can offer?* To the man who, according to his means, would set the best example in this respect, we would hold out the hope of an honorable name among farmers. He should be respected and esteemed and annalized as a social and moral reformer of the first order, who, by inducing all his neighbors to provide themselves with a full supply of apples, and pears, and peaches, and melons, and figs, and grapes, and plums, should therein teach them how to multiply the attractions and enjoyments, the virtues and the graces, of the homestead and the fireside. A carnivorous will always be accounted a sanguinary people; and he whose skill and good taste contribute to lead us to desert the butchers' shambles for the vegetable and the flower-market, acts the part and deserves the glory of the true patriot and friend of his country. It is he who would carry us back most nearly to that state of nature, of which it has been so beautifully written:—

> In the same temple, the resounding wood
> All vocal beings hymn'd their equal God,
> The shrine with gore unstain'd, with gold undrest,
> Unbrib'd, unbloody, stood the blameless Priest:
> Heaven's attribute was universal care,
> And man's prerogative to rule, but spare.

And yet look at the public taste so far as indicated, not by this list of premiums particularly, but by all such as are usually framed by Agricultural Societies. For the "*best Boar*," $10, and for "*the greatest variety of table Pears*," $3! and for "the best *twelve* kinds of Apples," $3! Yet look at the difference in the degree of intelligence and industrial habits which the production of these objects respectively employ!—The difference of skill, length of time and exactness of personal attention, and the presumption of intellectual refinement and taste in the two cases? It is not a little, in cases like this, in our humble opinion, that European Societies excel ours—we mean in the disposition of their funds. They offer high rewards for objects that at once indicate and demand a higher exercise of intellect, and which can only be the fruit of a more continued and enlightened study of subjects and sciences promotive of the art of Agriculture, and of a higher and wider range of rural enjoyment. They stimulate their scholars and talented writers and lecturers, by appropriation of a large portion of their funds, to go penetrate and labor in the regions of investigation and discovery, and to bring into view and practical exercise the philosophical principles that give labor-saving qualities to agricultural machinery, and a more scientific combination and efficient use to the various substances that serve o feed, sustain, improve and multiply their animals and their crops. And if these considerations have preponderating weight in forming the scale of premiums *there*, how much more should they have here, where labor is so much dearer and science not so much advanced? We will venture to affirm that a suitable premium or other inducement, that should prevail with such a man as Mr. Thomas or Mr. Downing, of this State, or Mr. Haggerston or Mr. McLellan, superintendents of the grounds of Mr. Cushing and Mr. Pratt, near Boston—to give for publication their experience in the culture and management of fruits and flowers—it would do more ulterior and permanent benefit to the State and the Country. than the public exhibition of *every fat bullock, and every fine gelding in the Union!*

But we are indulging in remarks that might perhaps better have place in a separate discussion. Certain it is that nothing is more deserving of thorough revisal and, as we humbly think, of reform, than the ordinary scales of Agricultural premiums, and the objects which the programmes put forth by Agricultural Societies should be framed to accomplish. In too many cases the funds are frittered away on things intended to form and to multiply attractions for the eye, and thus give transient eclat to a spectacle for gathering a crowd, which might be gathered as easily by a mule race or a show of monkeys. The fact is, we require too much to be done in this country for nothing. Men may work for nothing and find themselves for a short time, but that cannot be expected to be often repeated and yet have the work well done. To disburse the funds of a State Society, and to devise the best means of bringing into public view for the general use and common welfare that which would otherwise not be discovered, or be but partially known, is no trifling undertaking. It is a matter worthy of the deepest and most anxious study, and then to carry out the best system is a matter of much labor and detail, requiring the devotion of much time and personal attention—time, every moment of which is precious to men *equal to the duty*; time which, accordingly, ought to be *well paid for*, if we would have the work well done from year to year. But here again starts a train of reflection that we must at once cut short, even though we

have to recur to the subject on some future occasion, as we shall. After all, the suggestions which have almost insensibly escaped us, are not intended to have any particular or unkind bearing. No one can be more sensible than we to the kindness and efficiency of all who had control at the late Fair. We the better evince our impression of the importance of these exhibitions, and of having the funds at the command of the Society *most efficiently* administered, when we add that such consideration should be given as would command and liberally remunerate the time and talents of such men. Instead of looking on these exhibitions as a sort of holiday-fair, to which Farmers may go and carry their wives and daughters and sons, as to a militia mustering, let us for a moment elevate our contemplation to the real magnitude of the object, and consider that this New-York Agricultural Society is designed to represent the agricultural people and interests of a whole commonwealth, that now numbers near 3,000,000 of inhabitants, or nearly as many as fought for and achieved our Independence; and that its deliberations, and the use of the means at its command are intended to enlighten and to render more fruitful the labors of a great class, the annual produce of whose industry in 1840 is set down, on the highest statistical authority, Professor Tucker, at $108,275,241.

Is not *such an object* worthy of more liberal support from the State—such as would enable the Society to remunerate well a Board of Councilors of its best and wisest members?

We must not close these remarks, protracted as they are far beyond what we contemplated, without uniting in the expression of thanks which it may be taken for granted was unanimously voted by the Society to their accomplished President and his associate officers, under whose excellent management and with so much care and labor every thing was perfectly well arranged for the public accommodation.

Nor should we forget BAGG'S excellent Hotel, the head quarters for the officers of the Society. Arriving with a great crowd in the night, we were most fortunate in getting such good quarters, and only hope we may never be *bagged* in a worse place.

PREMIUMS.

CATTLE.

CLASS I.—*Durham*,

THREE YEAR OLD BULLS.

1st..E. P. Prentice, 'O'Connell.'
2d..J. M. Sherwood, 'Arrow.'
3d..G. Vail, 'Symmetry.'

TWO YEAR OLD BULLS.

1st..Bell & Morris, Westchester, 'Marius.'

YEARLING BULLS.

1st..W. W. Bullard, Southport, 'Victor.'
2d..G. Brinkerhoff, Albany, 'Peter Parley.'
3d..H. N. Cary, Marcy, 'Oregon.'

BULL CALVES.

1st..Z. B. Wakeman, Herkimer, 'Meteor.'
2d..Bell & Morris, 'Prince.'

COWS, THREE YEARS OLD AND OVER.

1st..J. M. Sherwood, Auburn, 'Philopœan.'
2d..Bell & Morris, 'Victoria.'
3d..R. C. Nicholas, Geneva, 'Flora.'

TWO YEAR OLD HEIFERS.

1st..J. M. Sherwood, Auburn, 'Sybil.'
2d...H. N. Cary, Marcy, 'Lily.'

YEARLING HEIFERS.

1st..H. N. Cary, 'Rose.'
2d..J. M. Sherwood.

HEIFER CALVES.

1st..Z. B. Wakeman, Herkimer, 'Sylvia.'

CLASS II.—*Herefords.*

BULLS.

1st..E. Corning, 'Sir George.'

YOUNG BULLS.

1st..T. H. Hyatt, Rochester, 'Don Quixotte.'

COWS.

1st..E. Corning, 'Aston Beauty.'
2d.. do. 'Mary.'

HEIFERS.

1st..T. H. Hyatt, 'Emma.'

CLASS III.—*Devon Cattle.*

THREE YEAR BULLS.

1st..H. H. Washburn, Otsego, 'Young Baltimore.'
2d...E. P. Beck, Wyoming Co. 'Wm. Wallace.'

YOUNG BULLS.

1st..B. P. Johnson, Rome, 'Ivanhoe.'
2d..E. P. Beck, 'Criterion.'

COWS.

1st..E. P. Beck, 'Victoria.'
2d..H. N. Washburn, 'Rose of Baltimore.'

HEIFERS.

1st..H. N. Washburn, 'Utica.'
2d..E. P. Beck, 'Flora.'

CLASS IV.—*Ayreshire Bulls.*

1st..C. N. Bement, Albany, 'Sheltie.'

YOUNG BULLS.

1st..C. N. Bement, 'Kenwood.'

COWS.

1st..To same, 'Alice.'

HEIFERS.

1st..To same, 'Fairy.'

WORKING OXEN.

Best 10 yoke, J. S. & W. Wadsworth, Geneseo.
2d do. Russell Blackstone and others, N. Hartford.
Best yoke Abram Hurd.
2d do. J. S. & W. Wadsworth.
3d do. Luther Comstock. Kirkland.
4th od. H. N. Cary, Marcy.
5th do. E. Sheldon, Cayuga co.
6th do. A. D. Neal, New-Hartford.
7th do. S. B. Rhodes, Paris.

CLASS V.—*Grade Cattle.*

COWS.

1st..D. Skinner, Utica.
2d..H. N. Cary, Marcy.
3d..F. Ingersoll, Vernon.

TWO YEAR OLD HEIFERS.

1st..H. W. Doolittle, Herkimer.
2d..H. Crocker, Utica.
3d..J. B. Nott, Guilderland.

YEARLING HEIFERS.

1st..H. W. Doolittle.
2d..A. J. Bell, Westmoreland.

HEIFER CALVES.

1st..A. McBride, Marshall.

CLASS VI.—*Native Cattle.*

COWS.

1st..H. H. Eastman.
2d..F. D. Grosvenor, Utica.
3d..H. Waters, Earlville.

TWO YEAR OLD HEIFERS.

1st..H. H. Eastman.
2d..W. L. Mould, Paris.
3d..E. F. Head, Kirkland.

YEARLING HEIFERS.

1st..A. J. Bell.
Best heifer calf, G. W. Drew, Kirkland.

MISCELLANEOUS.

BULLS.

1st..H. Putnam, Rome.
2d..P. Budlong.
3d..L. Smith, Otsego.
4th..S. M. Foster, New-Hartford.
Best bull calf, George Goertner, Canajoharie.

STEERS—THREE YEARS OLD.

1st..Hiram Gridley, Kirkland.
2d..J. S. Wadsworth.
3d..R. Blackstone, New-Hartford.

TWO YEARS OLD.

1st..M. L. Butler, New-Hartford.
2d..S. Scovil, Marshall.
3d..B. T. Case, Bristol.

YEARLING.

1st..S. W. Gunn, Kirkland.

FAT CATTLE.

Best pair, Charles Godfrey, Geneva.
2d..James Callanan, New-Scotland.
3d..C. Boorom & Co. Buffalo.

SINGLE OX OR STEER.

1st..Hugh Crocker Utica.
2d..E. P. Prentice, Albfiny.

COW OR HEIFER.

1st..C. Boorom & Co.
2d..E. Corning, 'Gay.'
3d.. " 'Matchless.'

SHEEP.

Class I.—*Long Wooled.*

1st..J. McD. McIntyre.
2d..—— Huxford, Oneida.
3d..—— Rathbun, Otsego, for yearling Dishley buck.

Best 10 lambs, premium divided between G. Brinkerhoff, Albany, and —— Hollis, Otsego.
Best ewes, —— Bushart.
2d do. —— Rathbun.

Class II.—*Bucks.*

1st..J. McD. McIntyre, Albany.
2d..F. Easton, Mt. Morris.
3d..Z. R. Wakeman, Herkimer.

FIVE EWES.

1st..J. McD. McIntyre.
2d..J. M. Sherwood, Auburn.
3d..Z. R. Wakeman.

LAMBS.

Best five, J. McD. McIntyre.

Class III.—*Merinoes.*

Best buck, H. & J. Carpenter, Poughkeepsie.
2d..J. M. Sherwood.
3d..Reed Burrett, Tompkins County.

FIVE EWES.

1st..J. M. Sherwood.
2d..Israel Smith, De Ruyter.

LAMBS

Best five, J. M. Sherwood.

Class IV.—*Saxony.*

Best Buck, S. B. Crocker, Vernon.
2d do. S. W. Church. do.
3d do. S. B. Crocker, do.
Best five ewes, S. W. Church.
2d do. S. B. Crocker.
3d do. D. C. Barnes.
Best five lambs, L. T. Marshall.

Flocks of Sheep from other States.

To J. H. Chatterton, J. H. Blaksley, Nathaniel B. Smith and Stephen Atwood, all of Litchfield, Conn.

FAT SHEEP.

1st..John Reeves.
2d..J. McD. McIntyre.
3d..George Brinkerhoff, Albany.

STALLIONS.

THOROUGH BRED.

1st..C. P. Albot, Stokes, Oneida, 'Consternation.'
2d..N. S. Hungerford, Oneida, 'Sir Harry.'
3d..C. F. Crosby, Albany, 'Florizelle.'
4th..T. J. Thompson, Otsego, 'Sir Charles.'

HORSES OF ALL WORK.

1st..S. Panshur, Onon. 'Young Eclipse.'
2d..W. Ferguson, Oneida, 'Kentucky Hunter.'
3d..S. D. Moody, St. Lawrence, bay 'Blucher.'
4th..D. Merriam, Lewis, black 'Blucher.'

DRAUGHT STALLIONS.

1st..E. Corning, 'Sampson.'
2d..Jno. Van Hoesen, Oneida, 'Patriot.'
3d..G. Warren, Onondaga, 'Dragon.'
4th..B. Pettet, Oneida, 'Honest Tom.'

THREE YEAR OLD STALLIONS.

1st..L. Cones, Oneida, 'Black Messenger.'
2d..J. M. Tiffany, Chenango, 'Young Godolphin.'

DISCRETIONARY.

1st..Isaac Fairchild, Onondaga, 'Beppo.'
2d..M. Clark, Oneida, 'Sir Roderick.'
3d..G. B. Roe, Madison, 'Young Sir Charles.'

MATCHED HORSES AND GELDINGS.

MATCHED HORSES.

1st..Arden Merrill, Rome.
2d..J. Butterfield & Co. Utica.
3d..Lewis Joy, Trenton.
Five pair Cream Colored Horses, Welch & Mann.

GELDINGS.

1st..J. Butterfield & Co. Utica.
2d..A. Soles, Schenectady.
3d..G. W. Gardner, Utica.

MARES AND COLTS.

1st..George Gordon, Geneva.
2d..J. B. Nott.
3d..A. Close, Paris.

THREE YEAR OLDS.

1st..Isaac Fairchild, Fabius.
2d..W. C. Burrett, Paris.

TWO YEAR OLDS.

1st..George Gordon.
2d..I. Fairchild.
Pair of Arabian Colts, Roswell Morgan.
Yearling Mare Colts, J. B. Nott.

HOGS.

Best boar, of Leicester breed, C. R. Nicholas, Darien.
2d best, Berkshire, J. M. Sherwood.
3d do. Berkshire, —— Marshall.
Best breeding Sow, Berkshire and Leicestershire, J. J. Bushart, Montgomery Co.
2d do. R. Eells.
3d do. Peter Smith, Oneida County.
Best four pigs, R. Eells.
2d do. James Plant, Utica.

POULTRY.

Best Dorking fowls, L. Tucker.
" Black Polands, G. Bement.
" Pr. Ducks, (Muscovy,) G. Bement.
" Turkeys, (wild,) L. Tucker.
" Geese, (African,) G. Bement.
" Lot large fowls, (Ostrich,) do.
" and greatest variety, L. Tucker.

VEGETABLES.

12 best table Turnips, A. Brigham, State Lunatic Asylum.
12 best Carrots, G. S. Dann, Utica.
12 best table Beets, D. Gray, Jr., Marcy.
12 best Onions, C. F. Crossman, Rochester.
3 best Heads Cabbages, D. Gray, Jr.
12 best Tomatoes, do.

10 Egg Plants, and one Tree do. E. C. Goodrich, Utica.
Best half peck Lima Beans, A. Brigham, Asylum.
3 best Squashes, to same.
Best half peck table Potatoes, James Rees, New-Hartford.
2d do. Robert Eells, Westmoreland.
Best Seedling Potatoes, four specimens, half peck each, H. N. Langworthy, Irondequoit.
12 ears best Seed Corn, Charles W. Eells, Kirkland.
Potato Onions, J. Greenleaf, Brockport.
Samples Watermelons and Cantelopes, E. C. Goodrich, and for Watermelons to G. W. Cromwell.
Sweet Corn, E. C. Goodrich.
Greatest variety of Vegetables, to D. Gray.

FRUITS.

Greatest variety of Table Apples, Ellwanger & Barry, Rochester.
2d do. D. Thomas, Cayuga.
3d do. J. C. Hastings, Kirkland.
Best 12 sorts do. O. Phelps, Canandaigua.
Greatest variety Table Pears, D. Thomas, Cayuga.
2d do. Ellwanger & Barry.
Greatest variety of Winter Pears, D. Thomas.
Best 12 Quinces, O. Phelps.
Best 12 Peaches, N. Goodsell, Greece.
Best 24 Plums, H. Green, Utica.
Best 6 bunches Native Grapes, W. Mervine, Utica.
Best 6 bunches Foreign Grapes, S. D. Childs, Utica.

FLOWERS.

Greatest variety, —— Boies, Utica; 2d, —— Jackson, Schenectady; 3d, Ellwanger & Barry, Rochester.
Best Floral Ornament, —— Boies, Utica; 2d, —— Lyndes, Utica; 3d, Ellwanger & Barry.
Best Seedling Dahlias, —— Boies, Utica; best 25 varieties, —— Jackson, Schenectady; 12 varieties, do. H. Chedell; five varieties flowers, Mrs. Jackson, Utica. Commendatory notices were taken of the collections of Mrs. Hinman and Mrs. Childs. Utica.

BUTTER.

Best lot from five cows, E. R. Evans, Marshall.
2d do. Thomas Hawks, Herkimer.
3d do. George Vail, Troy.
Best 25 lbs. made in June—1st, R. S. Ransom, Perryville.
2d..C. C. Crocker, Union.
3d..—— Case, New-Hartford.
Best 50 lbs. made at any time—1st, C. Adams, Martinsburgh.
2d..S. M. Foster, Litchfield.
3d..O. Cole Litchfield.
4th..Daniel Eells, Jr. New-Hartford.
5th..Wm. Otley, Oaks Corners.

CHEESE.

Best Dairy to Herkimer County.
2d do. Oneida County.
Best Cheese, one year old and over—1st, Robert Eells, Westmoreland.
2d do. F. Ingersoll, Vernon.
Cheese less than one year old—1st, W. S. Ford, Salisbury.
2d..W. Otley, Oaks Corners.
3d..T. Hallenbeck, Herkimer County.
4th..N. Wilcox, Winfield.
5th..J. Smalley, Norway.

MAPLE SUGAR.

1st..Joel Woodworth, Watertown.
2d..Moses Eames, Rutland.
3d..W. E. White, Walton.
4th..E. Bigelow.
5th..Sidney Spring.

SILK—SEWING.

1st..Clark Avery, Perryville.
2d..D. Irish, do.
3d..J. Hutchinson, Riverhead.

RAW SILK.

1st..Mrs. Irish, Perryville.
2d..C. Avery, do.
3d..B. Blackburn, Vernon.

CORN AND COB CRUSHERS, &c.

Best Corn and Cob Crusher, worked by Horse Power—J. A. Pitts, Rochester.
Farm Horse Cart—W. Carroll, Albany.
Best Improved Revolving Horse Rake—G. White, Middlefield.
2d do. A Brockway, Bridgewater.
Improved Ox Yokes—1st, A. Monroe, Galway, 2d, Wm. Hill, Marcy.
Grain Cradles—1st, E. L. Hager, Frankfort; 2d, David Flanders, Stockholm.
Hay Forks—Taylor, Buttolph & Co. Stockholm.
Grass and Cradle Scythes—Hiram C. White, Albion.
Hoes—R. & E. Clark & Co. Unadilla Forks.
Corn Sheller—Joseph D. Briggs, Saratoga
Corn Cutter—J. M. Cleveland, Adams.

FARM IMPLEMENTS.

Farm Wagons—1st, P. S. Eastman, New-Hartford; 2d, S. & M. Peckham, Utica.
Harrows—1st, Orin Barton, Geddes.
Scarifiers—1st, to same.
Cultivators—1st, to same.
Fanning Mills—1st. I. T. Grant, Schaghticoke; 2d, Clow & Crolin, Mentz; 3d, J. Patterson, Canandaigua.
Horse Power—1st, A. D. Childs, Rochester.
Threshing Machine—1st, A. Douglass, Skaneateles; 2d, Hart, Higham & Co. Utica; 3d, E. Hicks.
Drill Barrows, to plant potatoes or corn—Abner Randall, Oneida.
Straw Cutters—1st, J. G. Case, Utica; 2d, J. C. Rich, Penfield; 3d, M. Sanders, Cortland.

PLOWING MATCH.

Twenty competitors entered the field, and the awards were as follows:—1st, Frederick Smith, Westmoreland; 2d, Elon Comstock, Rome; 3d, Thomas B. Burrell, Geneva; 4th, O. R. Babcock, Bridgewater; 5th, H. N. Cary, Marcy; plowing by boy under 18 years of age, premium to E. W. Butler, Rome.

The Coming Fair of the American Institute.—In a late number, we invoked public attention to the Fair about to be held by the American Institute, and urged for it the contributions and support, in every form, which are due to the patriotic designs of the Institution.

It is on these occasions that we see concentrated the choice fruits of American Industry in all its branches. Here is presented an open and wide field for public spirited men to come forward and evince by *word* and deed their readiness to forward the march of improvement which is going on in all the arts, trades, and interests of our country, and those who go to acquire, should be willing to contribute to the stock of information; and assurance has been given, that the plainest and most unpretending, who have useful knowledge to impart, will be heard with as much respect as the most opulent and distinguished.

The Fair will commence at Niblo's Garden, on Monday the 6th of October, at 12 o'clock, as already advertised in the papers and in various forms.

Our Estimable Colleagues, the "American Farmer," and the "Agriculturist." "The Cultivator," the "Southern Planter and Southern Cultivator," and the "Farmers' Cabinet,"

with many others, for the last month, are rich far beyond their cost. We had intended to have glanced at their contents, and to have noticed Mr. Allen's excellent and well-timed Seed Store and Implement Ware-House, but the printer advises that there is not room for many things already in type.

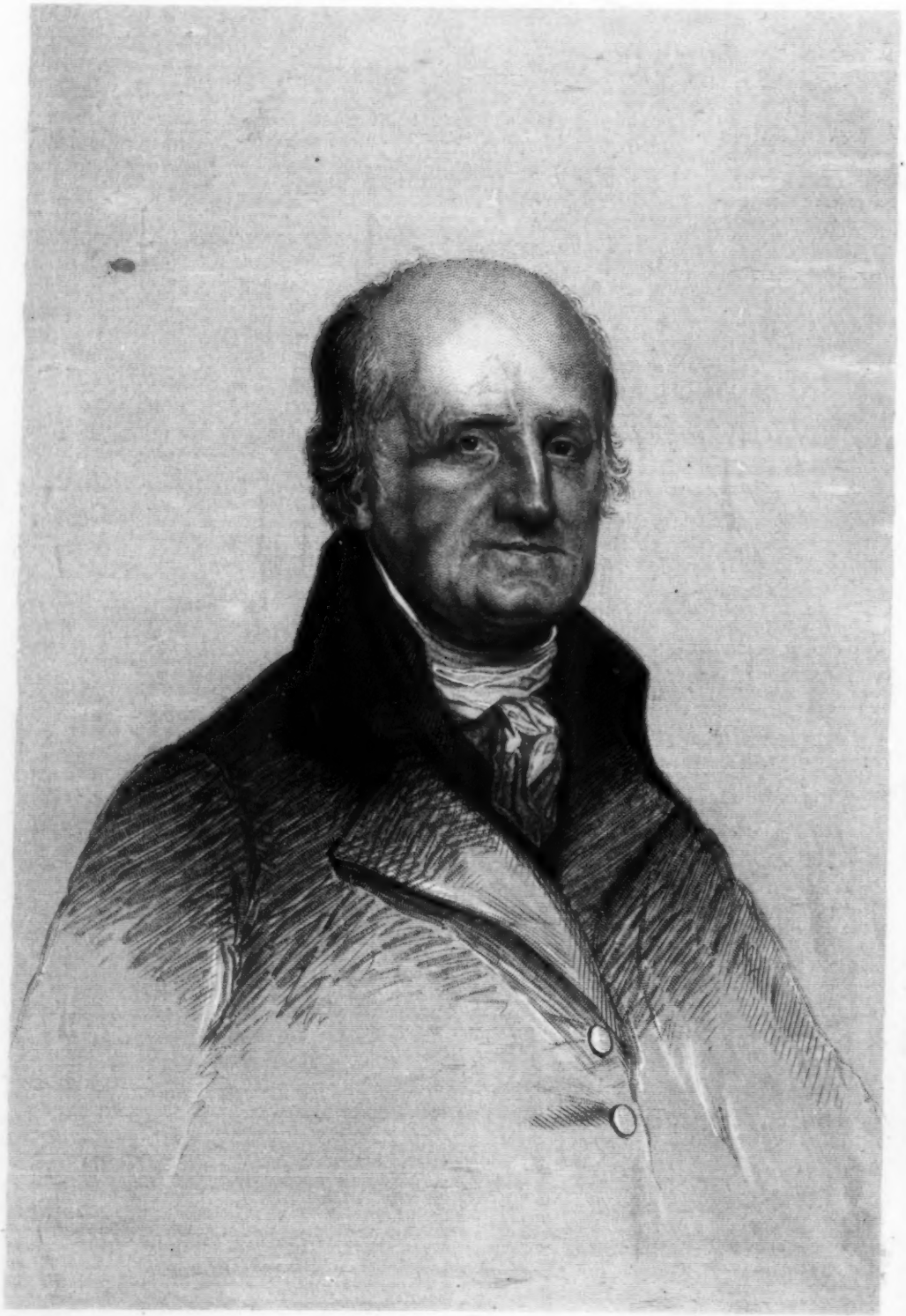
☞ Lowood is welcomed to a place in the Library, and we hope he will often occupy it, but his communication was too late for this number.

Important Motion in Parliament.—Mr. Escott made a specific motion for a repeal of the duties on Indian Corn, early next session, but the Anti-Repealers have taken the alarm and are appealing to the prejudices of the people, saying that Maize is food only for hogs in this country, are Englishment to eat what the Americans give their hogs!! We rejoice that a wedge has been entered. Doctor Bartlett's strong pamphlet is beginning to tell. We will give early attention to the subject, and shall write to our friend and Minister there—Hon. Louis McLane, who will not be neglectful of any opportunity to advance interests to which he has ever been personally so much devoted. In the meantime we wish our Agricultural Societies would invite Mr. Escott to come over and bring one of his most conspicuous opponents, to judge for themselves. We should like to catch them at the breakfast table of an accomplished Virginia housewife, of the old school, and see whether Maize bread in its half dozen various and delicious forms is worthy of the reproach which his opponents cast upon it. It was the standing every-day bread, at his dinner, of a certain American General, who captured Cornwallis and his army at Yorktown—any how!

PRICES CURRENT.

[*Corrected, September 23, for the Monthly Journal of Agriculture.*]

ASHES—Pots, 1st sort	℔ 100 lb.	3 93¾	@— —
Pearls, 1st sort, '45		4 25	@— —
BEESWAX—American Yellow		— —	@— 29½
CANDLES—Mould, Tallow	℔ lb.	— 9	@— 11
Sperm, Eastern and City		— 27	@— 29
COTTON—From		— 6	@— 9¾
COTTON BAGGING—American		— 12	@— 13
CORDAGE—American	@ lb.	— 11	@— 12
DOMESTIC GOODS—Shirtings	℔ y.	— 5	@— 11
Sheetings		— 6½	@— 15
FEATHERS—American, live		— 30	@— 33
FLAX—American		— —	@— 7½
FLOUR & MEAL—Genesee	℔ bbl.	4 68¾	@ 4 75
Troy		4 68¾	@— —
Michigan		4 62½	@ 4 68¾
Ohio, flat hoop		4 62½	@ 4 68¾
Ohio, Heywood & Venice		5 12½	@ 5 25
Ohio, via New-Orleans		— —	@— —
Pennsylvania		— —	@ 4 75
Brandywine		4 75	@ 4 87½
Georgetown		4 75	@ 4 87½
Baltimore City Mills		4 62½	@ 4 75
Richmond City Mills		5 75	@ 5 87½
Richmond Country		4 62½	@ 4 75
Alexandria, Petersburg, &c.		4 62½	@ 4 75
Rye Flour		3 12½	@ 3 37½
Corn Meal, Jersey and Brand		2 50	@ 2 75
Corn Meal, Brandywine	hhd.	11 87½	@12 —
GRAIN—Wheat, Western	℔ bush.	— 85	@ 1 —
Wheat, Southern	new	— 85	@ 1 —
Rye, Northern		— 68	@— —
Corn, Jersey and North	(meas.)	— 56	@— —
Corn Southern	(measure)	— 53	@— —
Corn, Southern	(weight)	— 53	@— —
Oats, Northern		— 42	@— —
Oats, Southern		— 35	@— 38½
HAY—North River	bales	— 70	@— 75
HEMP—American, dew-rotted	ton	85 —	@ 95 —
" " water-rotted		125 —	@175 —
HOPS—1st sort, 1845		— 12½	@— 15
IRON—American Pig, No. 1		30 —	@35 —
" Common		27 50	@30 —
LIME—Thomaston	℔ bbl.	— 95	@ 1 —
LUMBER—Boards, N.R.	℔M. ft. clr.	35 —	@40 —
Boards, Eastern Pine		10 —	@11 —
Boards, Albany Pine	℔ pce.	— 8	@— 18
Plank, Georgia Pine	℔M. ft.	33 —	@40 —
Staves, White Oak, pipe		45 —	@— —
Staves, White Oak, hhd		37 —	@— —
Staves, White Oak, bbl		28 —	@— —
Staves, Red Oak, hhd		27 —	@28 —
Hoops		25 —	@30 —
Scantling, Pine, Eastern		14 —	@16 25
Scantling, Oak		30 —	@35 —
Timber, Oak	℔ cubic foot	— 25	@— 37
Timber, White Pine		— 18	@— 25
Timber, Georgia Yellow Pine		— 35	@— 40
Shingles, 18 in	℔ bunch	1 75	@ 2 —
Shingles, Cedar, 3 feet, 1st quality		— —	@24 —
Shingles, Cedar, 3 feet, 2d quality		20 —	@22 —
Shingles, Cedar, 2 feet, 1st quality		— —	@17 50
Shingles, Cedar, 2 feet, 2d quality		15 —	@16 —
Shingles, Cypress, 2 feet		11 —	@13 —
Shingles, Company		— —	@29 —
MUSTARD—American		— 16	@— 31
NAILS—Wrought, 6d to 20d	℔ lb.	— 10	@— 12½
Cut, 4d to 40d		— 4	@— 4½
PLASTER PARIS	℔ ton	2 50	@ 2 62½
PROVISIONS—Beef, Mess,	℔ bbl.	8 75	@ 9 —
Beef, Prime,		5 —	@— —
Pork, Mess, Ohio, old and new		13 50	@14 —
Pork, Prime, Ohio, old and new		10 50	@11 —
Lard, Ohio	℔ lb.	— 7¼	@— 8½
Hams, Pickled		— 7	@— 7½
Shoulders, Pickled		— 5½	@— 5¾
Sides, Pickled		— —	@— —
Beef, Smoked	℔ lb.	— 8	@— 8½
Butter, Orange County		— 18	@— 22
Butter, Western Dairy		— 15	@— 16
Butter, ordinary		— 12	@— 13
Cheese, in casks and boxes		— 6½	@— 7½
SEEDS—Clover	℔ lb.	— 8	@— 9
Timothy	℔ tierce	12 —	@16 —
Flax, Rough		— —	@— —
SOAP—N. York, Brown	℔ lb.	— 3½	@— 5½
TALLOW—American, Rendered		— 7½	@— 7¾
TOBACCO—Virginia	@ lb.	— 3	@— 6
North Carolina		— 3	@— 5
Kentucky and Missouri		— 3	@— 7
WOOL—Am. Saxony, Fleece,	℔ lb.	— 35	@— 37½
American, Full Blood Merino		— 30	@— 33
American ½ and ¾ Merino		— 26	@— 28
American Native and ¼ Merino		— 24	@— 25
Superfine, Pulled		— 30	@— 31



Richard Peters.

Engd by J.N. Cumbrede for the Farmers Library Greeley & Mc Elrath.